Manufacturers Record
Reg. U. S. Patent Office

REFERENCE
DO NOT LOAN

Let business alone!

The best help the administration can render business is to let business alone.

Results from conferences between business men and New Dealers have been zero.

Unless willingness is shown to abandon at least some of the "reforms" which are the principal causes of the fear the country feels, they will continue to show a zero result.

"Reform" is the all pervading purpose of the More Abundant Life boys. They can't wait until the country gets on its feet, "reform" that has been going on for five years in their opinion has not gone far enough! This in spite of its staggering cost and the fact that we owe nearly twice as much as we did when we started on the boondoggling road to Utopia.

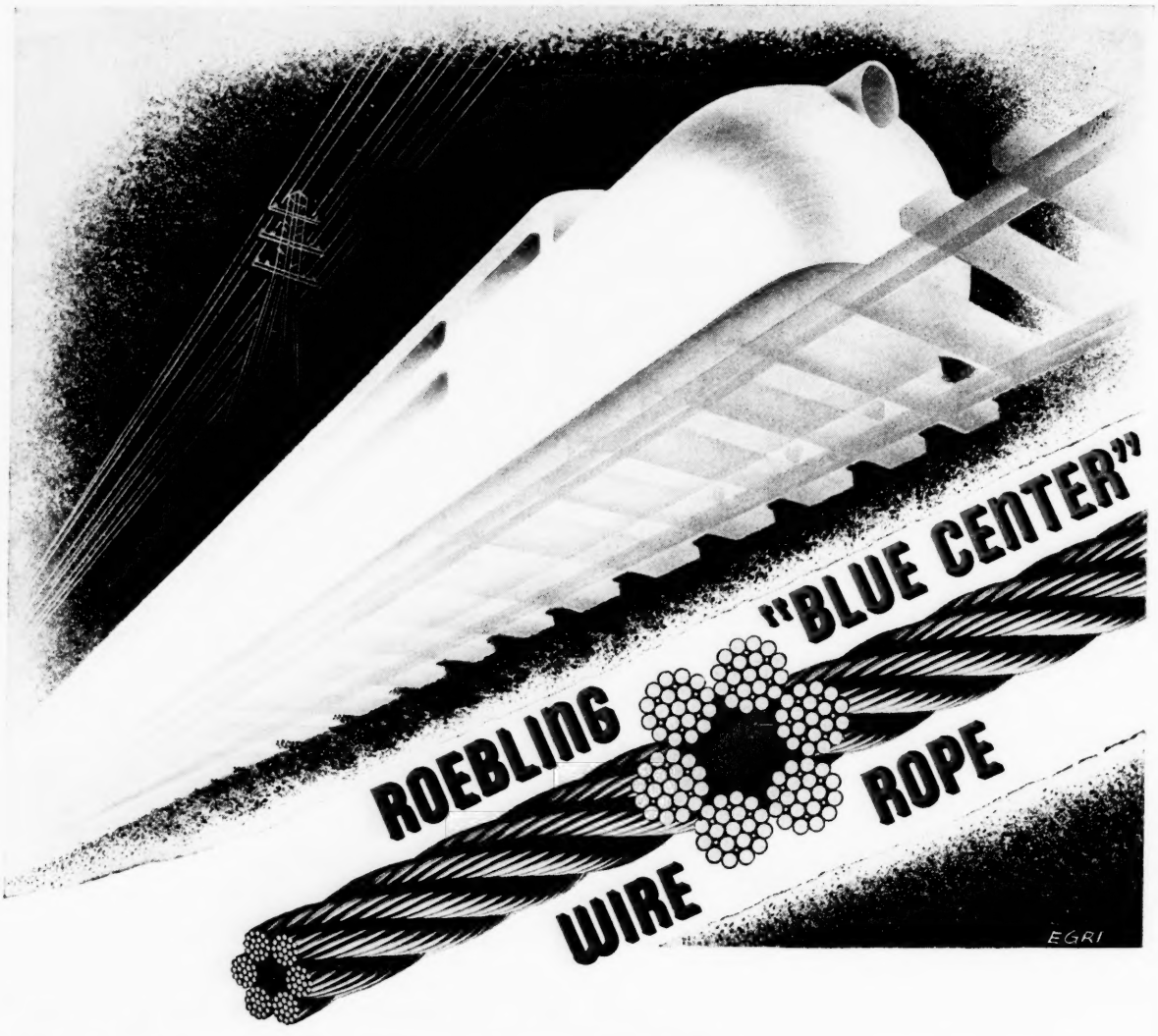
One dreadful result has been turning Americans depending on their initiative into puppets of a state. There is the serious danger for the future. More serious than the cost, huge as it is.

To what extent the national character has been impaired the future must tell. There are signs that the people are getting tired of this "reform" as they see the figures on the tax bill grow.

Los Angeles Public Library,
Serials Division,
530 S. Hope St.,
Los Angeles, California.

May, 1938

AS ADVANCED AS TODAY'S STREAMLINERS!



The highest achievement of the Roebling organization . . . of its unexcelled research and manufacturing facilities . . . and over ninety years of rope making experience!

JOHN A. ROEBLING'S SONS COMPANY, TRENTON, N. J.
BRANCHES IN PRINCIPAL CITIES

STRONGER—Wire of highest strength consistent with ductility and toughness

TOUGHER—Provides maximum resistance against wear, sudden shocks, vibration

SAFER—Unequalled for uniformity of quality

SAVING—Insures lowest general average operating cost

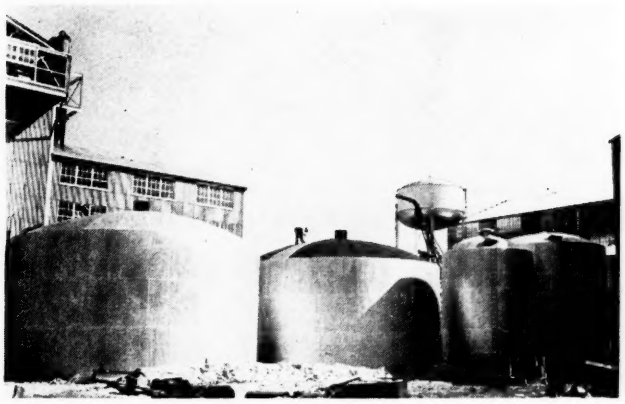
THE HIGHEST DEVELOPMENT IN ROEBLING WIRE ROPE

Entered as second class matter at the postoffice, Baltimore, Md., under the act of March 3, 1879. Volume CVII, No. 5 Monthly

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MAY 1938

Volume CVII No. 5



Liquor tanks built for the Brunswick Pulp and Paper Co., Brunswick, Ga., by Chicago Bridge and Iron Co.

MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

Published Monthly

by the

MANUFACTURERS RECORD PUBLISHING CO.

Frank Gould, President

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Subscribers are asked to notify us of change in address to avoid delay in service.

PUBLISHERS OF CONSTRUCTION AND BLUE BOOK OF SOUTHERN PROGRESS

Member A.B.C.

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THEY *Burn These up* IN MIDDLETOWN*

**and in Bethlehem, Gary, Pittsburgh, Youngstown, and other steeltowns*

Temperature: Over 2900° Fahrenheit.
Place: Steel Plant.
Purpose: Better Steel.
Reason: A special trait of Aluminum. All users of Aluminum benefit from this same trait, every day.

Steelmakers actually burn up Aluminum in order to make steels to your specifications. These pellets are one form in which Alcoa Aluminum is so used. And they call the process "killing."

Molten steel in-the-making absorbs large quantities of oxygen. This goes into chemical combination with the iron, and it just *has* to be torn away from the iron again. How much is torn away and eliminated determines the behavior and characteristics of the finished steel.

Since the very earliest days silicon and manganese have been used to do the first, gross, job of deoxidization. But today's exacting specifications demand such accurate control of the degree of "killing" that steelmakers everywhere have come to use Aluminum as the final, controlling, deoxidizer.

A very few ounces of Aluminum in each ton of molten steel results in just the right characteristics for the kind of steels from which your automobile fenders are made. A few more ounces result in the so-called "semi-killed" steels, used in such diverse applications as automobile frames and fencing wire.

A few more ounces of Aluminum do even more wonders to steel. Not only is the steel completely "killed," but the actual grain size of the steel is controlled. Grain size determines hardenability. Thus Aluminum has become the chief agent in the control of hardenability in the tough alloy steels so widely used today.

HOW USERS OF ALUMINUM BENEFIT... This important use of Aluminum is based upon its high affinity for oxygen, and upon the behavior of the resultant oxide.

Aluminum defies the weather for a similar combination of reasons. On the surface of the metal a thin film of oxide forms quickly, which checks further oxidization. That's why exposed Aluminum lasts and lasts.

But there are many chemicals for which, unlike oxygen, Aluminum shows no affinity. That is why the chemical industry is using so much of it for equipment; why Aluminum is so widely used everywhere foods and beverages are prepared and processed.

IT'S A LIFTABLE IDEA... We hope you get the idea that Alcoa Aluminum is uncommonly versatile. Lightness is only *one* of its virtues. Resistance to corrosion and superior conductivity of heat and electricity may be even more important to you. We have given Alcoa Aluminum the strength you need.

Steel people buy Aluminum to burn it up. Others use it to get long life! That contrast should suggest infinite possibilities.

How useful Alcoa Aluminum can be to you depends upon how curious you are about its possibilities. We like to work with curious people, who'll say to us: "How about Aluminum in this spot?" Thousands of business men who have asked us just that question have found our engineers genuinely helpful. Aluminum Company of America, 2109 Gulf Bldg., Pittsburgh, Pa.

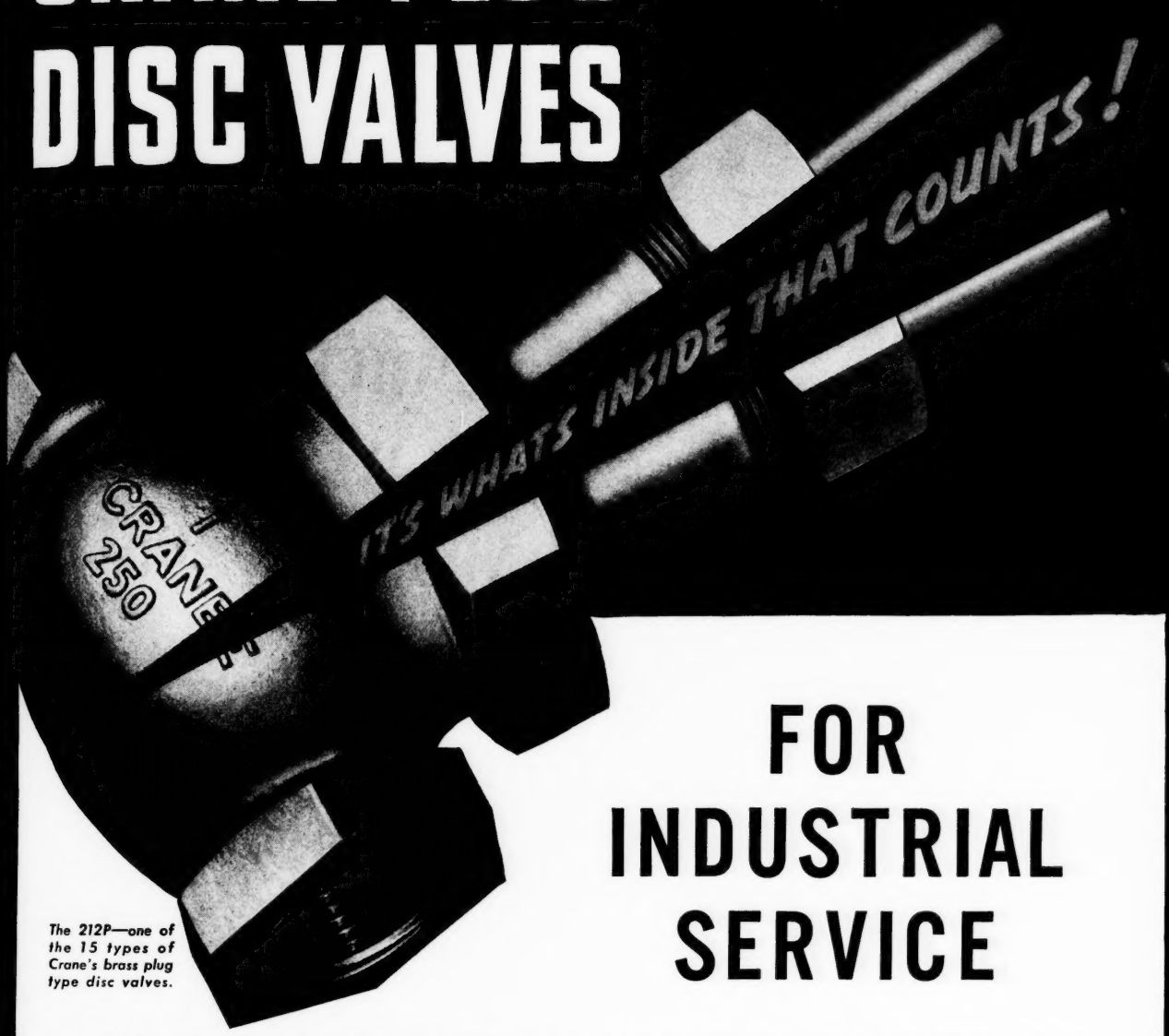


ALCOA

ALUMINUM

ALCOA · ALUMINUM

CRANE PLUG DISC VALVES



The 212P—one of the 15 types of Crane's brass plug type disc valves.

FOR INDUSTRIAL SERVICE

Here's a valve that will safely control 250-pound steam at 500° F. even in the toughest spots—a valve that you can operate in partly opened position or open and close frequently with the assurance that it will give longer and more economical service.

It's what's inside that counts in valve construction and the 212P plug disc valve is one example of the soundness of design and thoroughness of engineering that are a part of all Crane valves.

For example, consider the disc and seat. Crane laboratories have found that no one metal is suitable for every service. In the 212P, the disc and seat are made of different metals—neither too hard nor too soft—and it is this combination that offers the highest resistance to cutting, wire-drawing, erosion and corrosion under actual service conditions.

But important as it is, the disc and seat construction is only one part of a Crane plug disc valve. The same care in selection of metals—the same fine consideration by Crane engineers for careful design, extra strength and perfect balance in every part are responsible for the superior service you may expect from a Crane 212P.

Why Crane plug disc valves are more suitable for the toughest services in your plant, is fully explained in our new booklet "The Inside Story of Crane Plug Disc Brass Valves." A copy will be sent you upon request. There is no obligation.

CRANE

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

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NATION-WIDE SERVICE THROUGH 134 BRANCHES AND MORE THAN 500 WHOLESALERS

CARBORUNDUM

REG. U. S PAT. OFF

announces

IMPROVED FOUNDRY WHEEL BONDS AND STRUCTURES THAT GIVE INCREASED CUTTING ACTION AND LOWER COSTS



THE CARBORUNDUM COMPANY

THERE has been a constant improvement through research—a constant extending of the field of usefulness for foundry grinding wheels by Carborundum. This, of course, to meet the changing conditions of the foundry industry—to increase production—to lower wheel and labor costs—to solve adequately the problem of economically grinding steels, cast irons and their alloys. And now comes the announcement of a new series of wheels known as the "K" bond in Aloxite Brand Aluminum Oxide Resinoid and the "C" bond series in Carborundum Brand Silicon Carbide Resinoid.

The development of these two new bonds and the resultant wheel structures assures vastly increased cutting action with consequent increased production. The efficient operating speeds of these wheels range from 9000-9500 s.f.p.m.

And these new wheels are built for longer wheel life, again reducing grinding costs.

Then, too, there is the already well established "180" bond series, a vitrified product with increased metal removal rates at standard speeds (6000-6500 s.f.p.m.), developed particularly for the grinding of billets and steel and malleable iron castings.

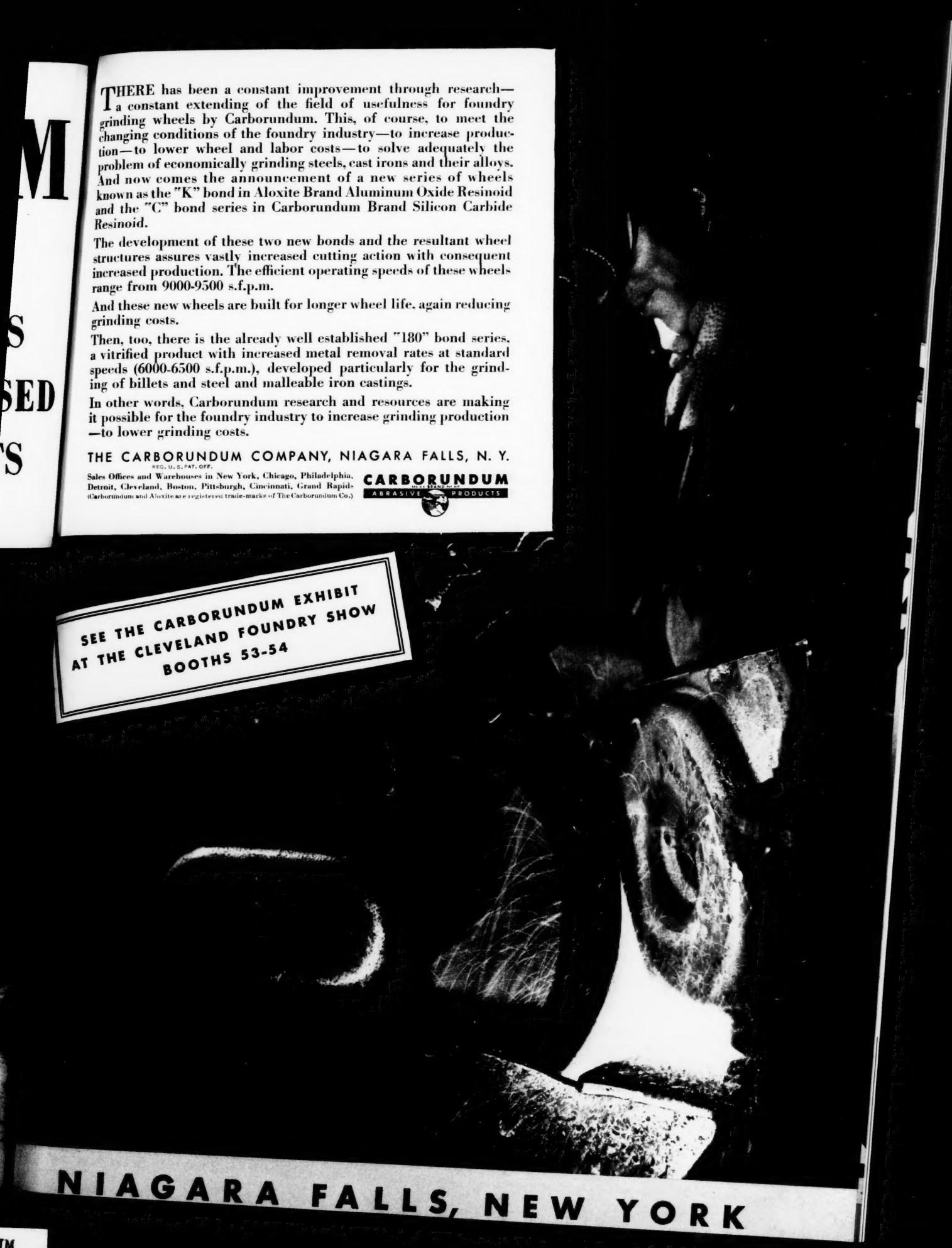
In other words, Carborundum research and resources are making it possible for the foundry industry to increase grinding production—to lower grinding costs.

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.
REG. U. S. PAT. OFF.

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids
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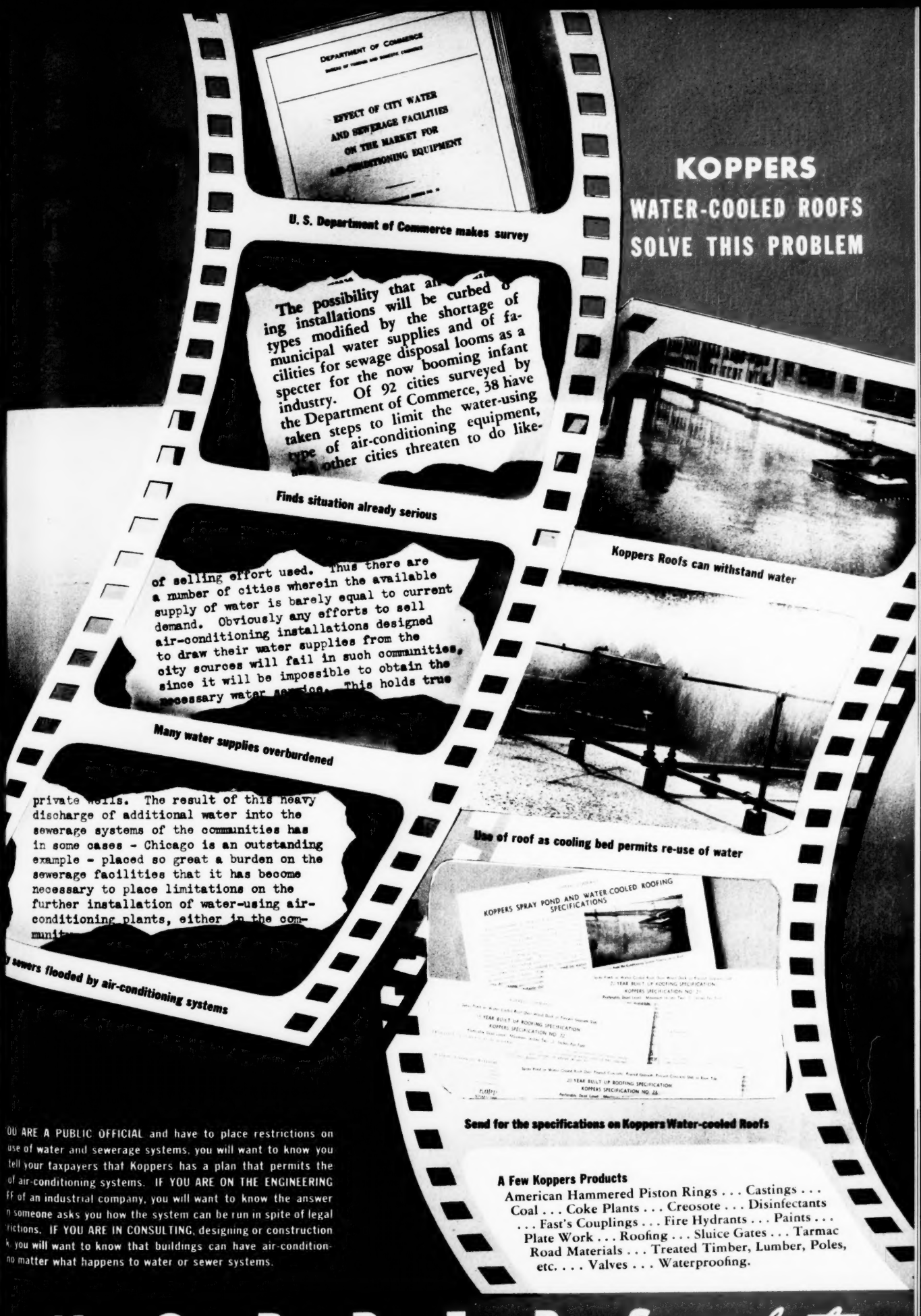
CARBORUNDUM
ABRASIVE PRODUCTS

SEE THE CARBORUNDUM EXHIBIT
AT THE CLEVELAND FOUNDRY SHOW
BOOTHS 53-54



NIAGARA FALLS, NEW YORK


13 Hard-working Years
and still no maintenance
needed for this
CONCRETE FLOOR
FOR 13 years this concrete floor has seen hard service in Continental Can Company's St. Louis plant—and it is still in excellent condition. Note that heavy bundles of steel sheets are moved on steel-tired trucks.
For your factory, industrial plant, garage or warehouse—store, office, or building for whatever purpose—it will pay you to specify a concrete floor finish. A properly finished concrete floor—
1 Resists heavy abrasive traffic.
2 Stays even; good drainage and easy trucking permanently assured.
3 Promotes cleanliness—water-resistant, not harmed by water; no open joints to collect dirt; can be hosed or swept clean.
4 Provides sure footing, sure traction; concrete retains its fine gritty texture wet or dry; special non-slip finish easily obtained.
5 Is firesafe.
6 Saves money in low first cost, low maintenance, freedom from repairs, more efficient haulage.
Let us send "Concrete Floor Finishes" showing how to build a durable, good-looking floor for your purpose.
PORTLAND CEMENT ASSOCIATION
Dept. A5-21, 33 West Grand Avenue, Chicago, Illinois
A National Organization to Improve and Extend the Uses of Concrete



OU ARE A PUBLIC OFFICIAL and have to place restrictions on use of water and sewerage systems, you will want to know you tell your taxpayers that Koppers has a plan that permits the of air-conditioning systems. IF YOU ARE ON THE ENGINEERING FF of an industrial company, you will want to know the answer n someone asks you how the system can be run in spite of legal rictions. IF YOU ARE IN CONSULTING, designing or construction k you will want to know that buildings can have air-condition- no matter what happens to water or sewer systems.

A Few Koppers Products

American Hammered Piston Rings . . . Castings . . . Coal . . . Coke Plants . . . Creosote . . . Disinfectants . . . Fast's Couplings . . . Fire Hydrants . . . Paints . . . Plate Work . . . Roofing . . . Sluice Gates . . . Tarmac Road Materials . . . Treated Timber, Lumber, Poles, etc. . . . Valves . . . Waterproofing.

a KOPPERS product

ENGINEERS IN MANY FIELDS ARE USING THIS REMARKABLE METAL



DHS BRONZE

CASTINGS **FORGINGS**

Minimum Physical Properties

Grade	No. 1	No. 2	No 3.	No. 4
Ult. Ten Str. (lbs./sq.")...	120,000	115,000	105,000	90,000
Yield Pt.....(lbs./sq.")...	95,000	90,000	60,000	45,000
Elastic Lim...(lbs./sq.")...	60,000	55,000	50,000	40,000
Elon.—(% in 2").....	10	12	17	25
Red. Area—%.....	10	12	17	25
Brinell Hard. No.....	250	225	200	185
Weight—(lbs./cu.")	.275	.278	.280	.285

Note: Recommended for applications where lineal contact speeds do not exceed 250 ft. per min.

If you have an application involving heavy-duty and excessive wear... heavy shocks or impact... or pressure-tight, high compression, vibrating, or heavy rolling contact service, get details on DHS. Four grades are available.

HAVE *YOU* A PROBLEM FOR *DHS* BRONZE?

Exceptional capacity to withstand shocks, excessive wear, and heavy loads has led to general use of DHS bronze for difficult applications. DHS Bronze exceeds all other non-ferrous alloys in compressive strength, yet is ductile. It weighs 8 to 10% less than red-metal (tin, lead, copper or nickel) bronze. With a maximum combination of ductility, hardness and strength, it has remarkable acid resisting properties when exposed to certain acid solutions. It will not score contacted metals. It costs less than stainless steel, other non-ferrous nickel alloys, and aluminum bronze—and surpasses them for many applications.

Other Available Alloys

NON-FERROUS ALLOYS

Manganese Bronze
Aluminum Bronze
Nickel Bronze
Silicon Bronze
Phosphor Bronze
Bearing Bronzes
Hydraulic Bronzes
Specification Bronzes
Federal—S.A.E.—A.S.T.M.

FERROUS ALLOYS

Gray Iron
Semi-Steel
High-Test Iron

KOPPERS COMPANY

BARTLETT HAYWARD DIVISION, BALTIMORE, MD.

DUCTILITY · HARDNESS · STRENGTH

a KOPPERS product

A.C.

"ALTERNATING CONDITIONS" PROVE VALUE OF UTILITY SERVICE

THIS is a good time to make the most of public utility service facilities.

Quick changes of industrial operating cycles—down or up—find your "central station" supply able to take them in stride, its flexibility suited to whatever demand you put on the switch and valve—eliminating this production capacity problem for you.

And whether year-end or year-'round—the business using this utility's service has checked off and rid itself of one "inventory liability."

Fuel stocks and fuel price fluctuations—power inventory, obsolescence, replacement and repair—plant space—insurance, extra personnel and liability—limitations of capacity with business changes . . . the whole thing is simplified with "central station" service.

The ups and downs of 1937 have proved it to thousands of firms.

THE companies in this system maintain for the benefit of their customers a personnel of experienced power, heating and lighting engineers . . . for co-operation in all matters looking to improving customers' operations through use of the companies' services.

THE COMMONWEALTH & SOUTHERN CORPORATION

ALABAMA - FLORIDA - GEORGIA - ILLINOIS - INDIANA - MICHIGAN - MISSISSIPPI - OHIO - PENNSYLVANIA - SO. CAROLINA - TENNESSEE

"IS IT ANY WONDER THEN THAT AN INDUSTRIAL DEVELOPMENT OF ALMOST EXPLOSIVE PROPORTIONS IS TAKING PLACE IN THE SOUTHEAST?"

"The Southeast has everything to offer, Raw Materials, Transportation, Labor, Climate . . . A large number of manufacturers are fed up on the labor trouble, high wages, high taxes existing in other sections and are waiting with open arms to be shown the attractions of the Southeast. Is it any wonder then that an industrial development of almost explosive proportions is taking place in the Southeast?"

From a recent address by JAMES A. LEE, *Managing Editor*
CHEMICAL & METALLURGICAL ENGINEERING



TO AID AND PROTECT INDUSTRIAL DEVELOPMENT IN THE SOUTHEAST



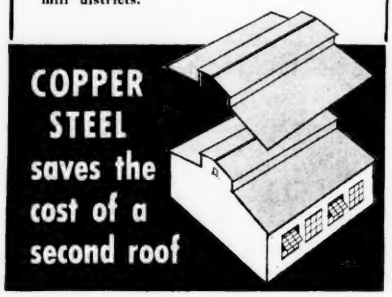
Southeastern Governors Conference

LAWRENCE WOOD ROBERT, JR.,
Executive Director,
Bona Allen Building, Atlanta, Georgia.

U·S·S Copper Steel Roofing answers *Yes* to all these important questions:



U·S·S Copper Steel Roofing and Siding gives two or three times the service of ordinary steel under corrosive conditions found in mill districts.



Does it give adequate and complete protection?
Yes. Copper Steel Roofing is strong and tight—is seldom damaged by violent wind storms or rain, snow, sleet and hail.

Does it protect against lightning and fire?
Yes. A Steel roof, properly grounded, is an effective shield against lightning and offers maximum fire protection.

Will it last?
Yes. U·S·S Copper Steel endures because it resists many different types of corrosion. In an endurance test at Annapolis, Md., thin, 22-gauge (one thirty-second inch thick), *uncoated* steel sheets of various kinds were exposed to corrosive sea air, and after 21 years U·S·S Copper Steel definitely demonstrated its excellence and superiority in service.

Is it economical?
Yes. Copper Steel is low in first cost, requires no expensive under-support, can be installed quickly without high priced labor, costs less to maintain because it lasts longer, requires fewer coats of paint because the oxide clings tightly to the metal and does not scale off easily.

Can it be insulated against heat and cold?
Yes. Combined with sheets of insulating material, Copper Steel Roofing keeps buildings warmer in winter, cooler in summer.

Is U·S·S Copper Steel available everywhere?
Yes. Distributors in most cities give quick deliveries on all standard sheets.

If you have any questions we haven't answered, write to one of the companies below. We welcome inquiries.

U·S·S COPPER STEEL ROOFING SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Burroughs
FANFOLD MACHINE

A DISTINCT ADVANCE IN FANFOLD



It Does More— AUTOMATICALLY!

Carbons Shift Automatically

•

Carriage Opens Automatically

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Completed Forms are Released Automatically

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New Forms Lock Into Place Automatically

•

Carriage Closes Automatically

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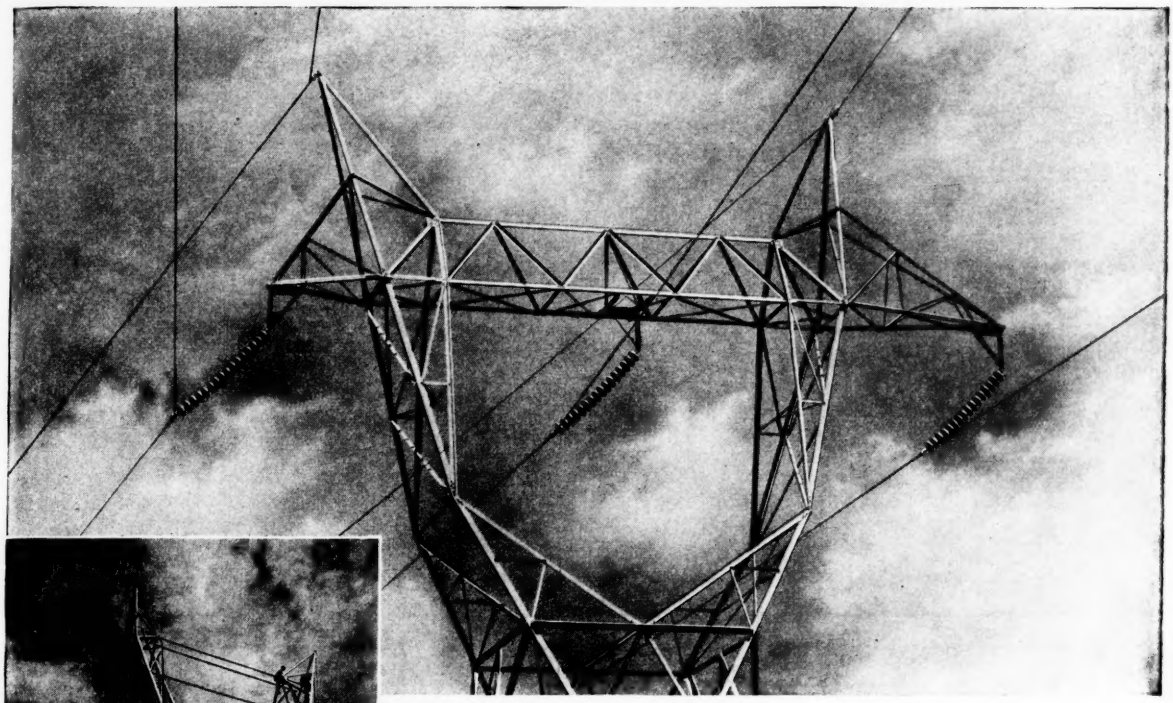
Reverse tabulation, carriage return and spacing-up are controlled electrically by one key!

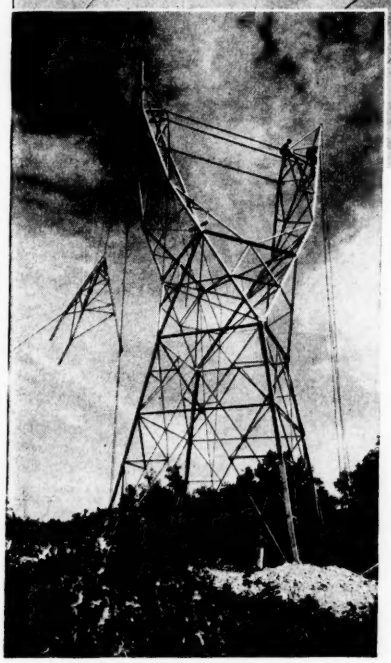
SEE FOR YOURSELF—Ask for a demonstration on your own work. Compare it, feature by feature, with any fanfold machine that you have ever seen.

BURROUGHS ADDING MACHINE COMPANY · DETROIT, MICHIGAN

MODERN TOWERS

for Modern Transmission Requirements





LONG Distances, High Voltages, and the modern need for absolute dependability of electric power transmission are making transmission tower design increasingly more important. To exactly suit American Bridge Towers to their purpose, design is carefully considered from these varied viewpoints.

What is the character and accessibility of the terrain?

Will the tower provide effective insulation for the specified voltages?

What are the stresses that the service entails and is there adequate strength to withstand these?

How easy and economical will the tower be to erect?

In all towers designed by American Bridge, cross-arm frames and shafts are clean cut, with a minimum number of parts and complete absence of complicated connection details. Members are shipped in longest practical lengths with splices most favorably located for speedy erection and the least possible field handling.

It is true economy to specify "Towers by American Bridge." Write us about your next need.

AMERICAN BRIDGE COMPANY

General Offices, Frick Building, Pittsburgh, Pa.

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Duluth · Minneapolis · New York · Philadelphia · St. Louis

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UNITED STATES STEEL

The Arundel Corporation

BALTIMORE, MD.

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Distributors of Sand - Gravel - Stone and Commercial Slag

A COMPLETE ORGANIZATION

Our complete organization with years of experience in successfully executing large construction contracts of various kinds is prepared to undertake the construction of earth, masonry and concrete dams, drydocks, dredging of all kinds, river and harbor improvements, deepening channels, hydraulic filling and rock work, tunnels, railroad construction, sewers and waterways.

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FILLING, LAND RECLAMATION, CANALS, PORT WORKS
RIVER AND HARBOR IMPROVEMENTS—DEEP WATERWAYS AND SHIP CHANNELS



We are especially equipped to execute all kinds of dredging,
reclamation and port works in Southern waters.
Correspondence invited from corporate and private interests everywhere.

Contractors to the Federal Government

ATLANTIC GULF AND PACIFIC CO.

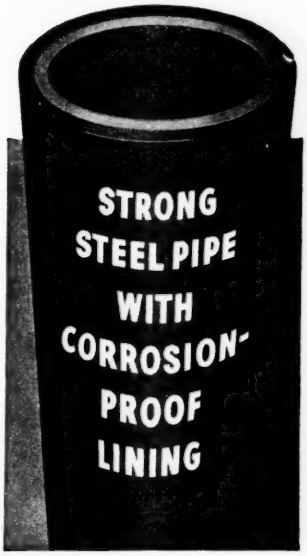
NEW YORK: 15 Park Row HOUSTON, TEXAS: Scanlan Building



So they bought DUROLINE- *and got both!*

DUROLINE Pipe offers you two-way protection—

1. AGAINST BREAKAGE. *It has the strength of high-grade steel . . . to stand up under high water pressures and to resist failure due to shock, ground settlement, or vibration.*
2. AGAINST REDUCED CAPACITY. *It has a lining of dense, inert material . . . a permanently effective seal against corrosive waters and tuberculation.*



HIGHER pressures, needed to supply adequate water service according to today's standards, call for the high tensile strength of steel.

When you are working with DUROLINE, you can design the line *exactly* to required capacity. No need to add a factor to take care of loss in carrying capacity due to tuberculation. In many cases, this advantage permits the use of a pipe of smaller inside diameter, a saving which frequently more than balances the slight additional first cost.

Dollar for dollar, you'll find that DUROLINE Pipe is by far the best buy for corrosive water service. Because of the double-service feature, its useful life is often three or more times that of unlined pipe. Write for a copy of the DUROLINE Bulletin.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

AN honest doubt about the ability of a pipe material to meet all the qualifications for long and economical service may be unwarranted or it may be a danger signal. Cast iron pipe is beyond doubt. Service records running into centuries prove that cast iron pipe possesses the strength, toughness and stubborn resistance to corrosion which a pipe material must have for long and economical ground service.



Lithographed on stone by James E. Allen for U. S. Pipe & Foundry Co.
Copyright 1928, U. S. Pipe & Foundry Co.

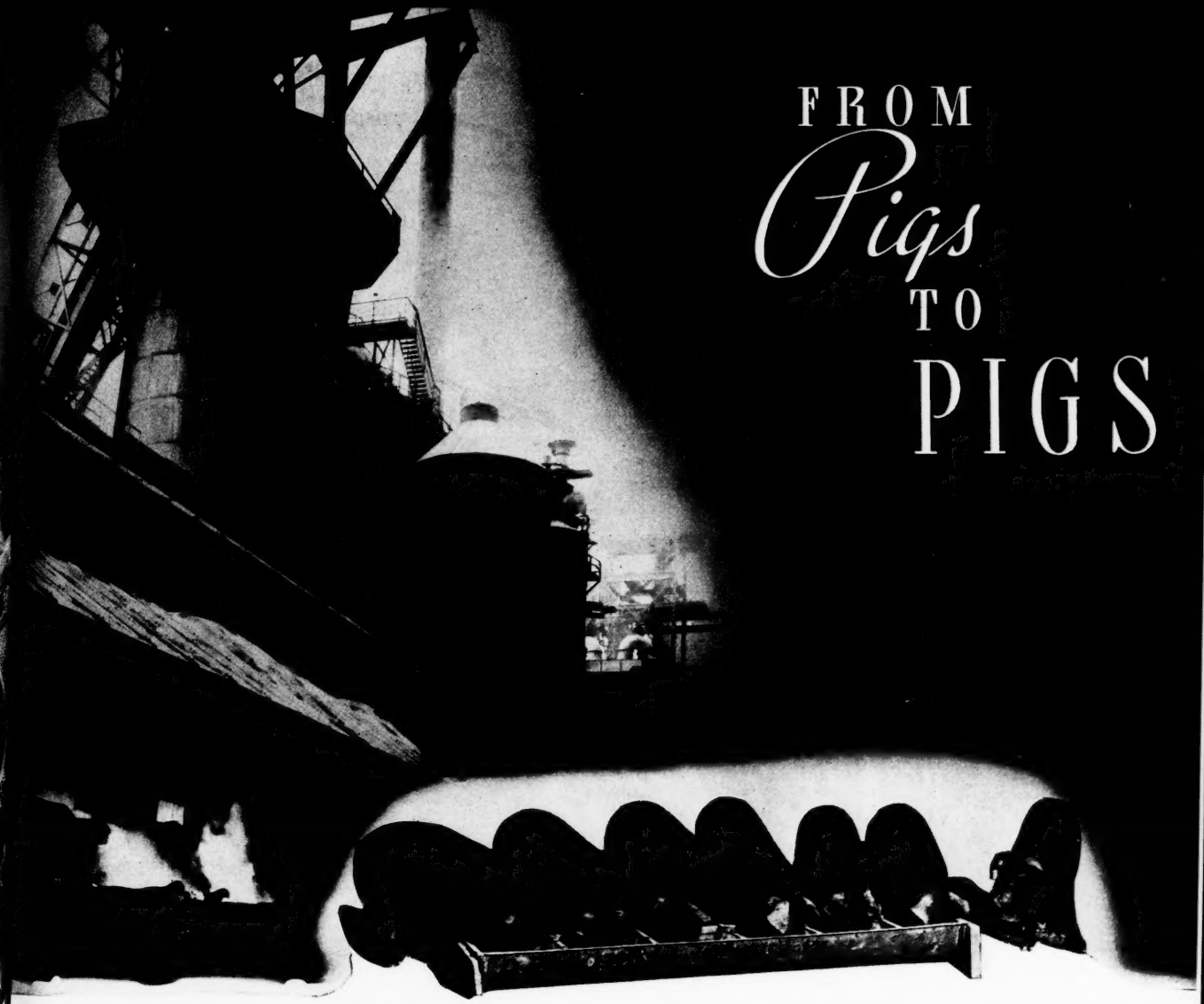
U.S. cast iron PIPE

SUPER-DE LAVAUD CENTRIFUGAL CAST IRON PIPE

U. S. Pit Cast Pipe *U. S. Mechanical Joint Pipe*
U. S. Threaded Cast Iron Pipe
U. S. Ni-Resist Cast Iron Pipe
U. S. Flexible Joint Pipe *U. S. Cast Iron Culverts*
Alloy and Gray Iron Castings
U. S. Cast Iron Roof Plates

Cast iron and alloy cast iron pipe centrifugally or pit cast—for water works, gas, sewerage and drainage service as well as industrial uses involving corrosives.

U. S. PIPE & FOUNDRY CO.
BURLINGTON, NEW JERSEY
Foundries and Sales Offices throughout the U. S.



FROM *Pigs* TO PIGS

★"Modern" applies today to farms as well as cities--and *steel* has made this true. A sizeable percentage of the "pigs" (masses of metal cast in a mold) from all blast furnaces find their way to the farms in the form of steel---in plows and in modern equipment which increases production; granaries that protect the harvest; pipe, pumps and troughs by which animals are fed and watered.

On an average farm are hundreds of uses for steel. Look around your home--whether farm or city--and note how much you, too, depend on steel --hinges, stoves, cooking utensils, refrigerator, plumbing, heating and countless other uses.

Not, of course, just any steel. There are actually thousands of kinds of steel, and we have spent years and millions of dollars to equip ourselves to work with you, to find which will exactly meet your needs. No matter how small the order may be every Youngstown resource for quality is employed in its production.

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO

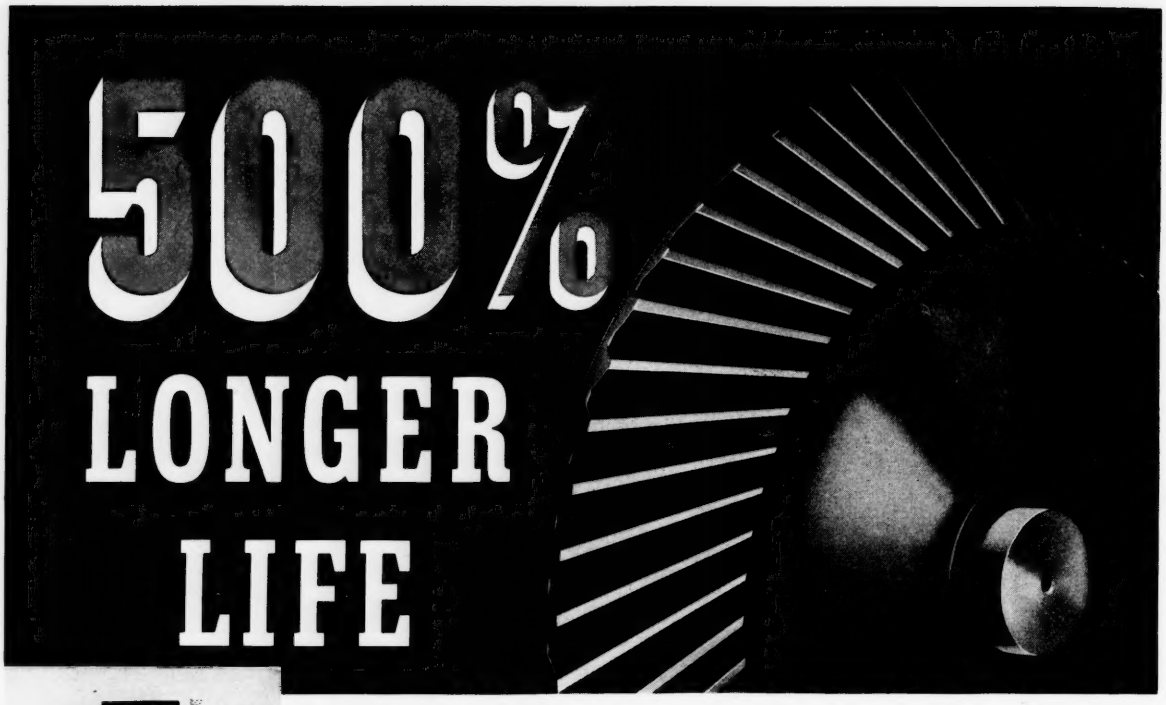
QUALITY · YOUNGSTOWN · SERVICE

Sheets - Plates - Pipe and Tubular Products - Conduit Tin Plate - Bars - Rods - Wire - Nails - Unions - Tie Plates and Spikes.

25-6A

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REPUBLIC STEEL
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BERLOY

TRUSCON

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NILES
STEEL PRODUCTS

ELECTRUNITE
TUBING

-Yet the steel costs less

The price of gear steel in 1937 was 19% less than the price in 1923 and the improvements in the steel during this period have increased gear tooth life more than 500%.

The price of enameling iron sheets for making one-piece washing machine tubs during 1937 was 42% lower than in 1923. The drawing quality and finish however have improved so that tub manufacturers have eliminated one drawing, one heat treating and two finishing operations.

Sheets for automobile fenders in 1937 were priced 46% below 1923 prices. One glance at a modern fender shows the improved drawing quality of the steel while the better surface has eliminated six or more priming and finish coats.

Republic Steel has spent millions of dollars in research and plant facilities to make better steels for every use available at lower prices. Figure the savings these steels will make in your fabricating costs — the better products they make possible — the widened markets they develop for your products — and you'll agree — these tailored-to-order steels are worth all they cost.

Let a Republic representative tell you where 1938 steels will fit into your products — or write for up-to-the-minute facts on the kinds of steel you buy. Republic Steel Corporation, Cleveland, Ohio.

GULFSTEEL

DIVISION OF REPUBLIC STEEL CORPORATION ★ GADSDEN, ALABAMA

GULFSTEEL

STEEL AND TUBES, INC.
TRUSCON STEEL COMPANY
UNION DRAWN STEEL DIVISION
BERGER MANUFACTURING DIVISION
NILES STEEL PRODUCTS DIVISION



UP TO CONGRESS

IN his message to Congress and his broadcast of April 14th, President Roosevelt said, "There is placed on all of us the duty of self-restraint. * * * Every patriotic citizen must say to himself or herself that immoderate statement, appeals to prejudice, the creation of unkindness, are offenses not against an individual or individuals, but offenses against the whole population of the United States. Self-restraint implies restraint by articulate public opinion, trained to distinguish fact from falsehood, trained to believe that bitterness is never a useful instrument in public affairs."

If ever articulate public opinion should be heard, it is now before it is too late. Rich in resources and resourcefulness as America may be, it cannot go on as it is headed and avoid overwhelming disaster.

Fear controls the buyer and fear controls the producer in the present state of the nation's affairs. Improvement work does not go on because of lack of confidence and confidence is lacking because of the measures adopted of punitive character holding up business men as malefactors when business is the source of employment and the creation of the country's wealth.

Bitterness has been exhibited toward business. The attitude has been unmistakeable for five years. Business has been anathema with the finger of accusation constantly leveled against it. It is no wonder fear has resulted.

The fatuous belief evidently is held that business can overcome every handicap in the way of restrictive legislation; can proceed in the making of plans for progress when damaging tax laws have crippled its initiative; can sell and buy and improve when radical labor is encouraged to take the whip hand and leave employers virtually helpless in labor relations; can step out blindly in the belief that all is well when it knows that the foundations of its economy are being pulled from under it so that there may be an authoritarian domination by government centered at Washington.

Notwithstanding the appeal for restraint in the very address under discussion, class hatred is promoted by the implication that business could have taken up the slack and because it has not gone ahead government must.

Impractical ideas which put the country in overwhelming debt to carry them out; Utopian theories which were tried and proved failures; economy that turns common sense and experience upside down hardly call for restraint.

In this emergency every business man, every citizen, should tell Senators and Representatives in Congress that upon Congress rests the responsibility of bringing order out of chaos, of restoring the country to a basis of stability, to save the country from the grave dangers confronting it. There is no doubt that the vast majority of business men believe that more extravagance will bring greater trouble, that the only way is to cut expenses and to do away with laws that work havoc.

It is up to Congress.

If Congress will do this, confidence will return. Employment will increase, idle capital will be invested and the tax bill, huge as it may be, will be met.

Upon Congress and articulate public opinion depend the outcome. If Congress will call a halt, a way will be found through the maze of doubt and confusion prevailing.

As we see it—

Necessary for Defence

Advocates of a larger navy program that will place the United States more nearly on a parity with other world powers are meeting with opposition from those who feel that the money should be saved or spent to better advantage in relieving unemployment and distress.

The entry of the United States in the World War found this country ill-prepared to take its part in the fight. The task of sending millions of men to France, which was the deciding factor in bringing the war to an end, would have been impossible in the time at our disposal without the aid of the navy of Great Britain. In the rush for ships of all kinds and sizes we built iron ships and wooden ships. Records were made of turning out a ship in 30 days from keelson to main truck. Only America could do that but it is to be doubted if we want to repeat the experience. Many millions were wasted. Perhaps it never will be known how many.

No one likes to contemplate the entry of this country into another war. It is folly though to shut our eyes to the possibility. We are a part of the world and while the United States can within its own borders probably produce its own requirements in time of stress yet because of our inter-trading with other nations and with a polyglot population of our own which has ties in every land, it will not do to shut ourselves in a shell of self-sufficiency and say that come what may we will keep out of war.

What then should be done? Is it not better to so prepare ourselves by the building of an adequate navy to be able to say effectively "thus far and no further." That applies to our own shores and to the continent south of us. If the Monroe Doctrine is to be maintained and our neighbors of South America are not to find their hands more than full in contending with forces searching for more territory, reaching out for greater power and wealth and land for colonization purposes which by its coming about would prove a grave menace to the United States, we must show convincingly that on this side of the Atlantic and the Pacific, America is not to be trifled with. It is a measure of defense against what may menace the United States.

The building of a greater navy is a necessary work. From an economic standpoint it is a practical move in the production of materials and the employment of labor. It should receive the support of the country.

Diversification

In an address at Baton Rouge, Louisiana, Dr. Milton P. Jarnagin, head of the animal husbandry department of the University of Georgia, cited figures to show that there was an increase of 85.3 per cent in the number of animals slaughtered under federal meat inspection in the South from 1920 to 1937.

Pointing out the necessity for diversifying agricultural supply to furnish a well balanced and abundant food supply; to protect the land and increase its crop yield capacity he recommended an increase of dairy cattle of not less than 25 per cent and of hogs, 50 per cent. Permanent pastures for sheep, feed and soil conservation will aid live stock success.

It is apparent to every traveler in the South that the grade of dairy cattle in recent years has been markedly improved. Banks and business men have aided the campaign of impressing upon farmers what it will mean in the yield of crops and the improvement of their farm to increase the number and quality of their live stock. The necessity for unremitting effort to promote this necessary work is more apparent when the millions of dollars which go out of the South every year for food supplies are considered.

The South's success in diversified agriculture can be more easily attained than that of other sections. Here we have a growing season three-fourths of the year, a rich soil, abundant rainfall over large areas and an equable climate. As its industry advances and becomes diversified, there is no more important work than to lend aid in bringing about a fuller appreciation on the part of farmers of the necessity of adequately meeting the requirements of their home markets. Bankers can do no better work than to lend money to farmers for better stock and up-to-date equipment.

Home Building

The Labor Department reports the value of residential buildings for which permits were issued in March showed an increase of 72 per cent compared with February. The Secretary of Labor is quoted as saying "This is considerably larger than the usual seasonal increase." The value of additions and alterations increased only 12 per cent and new buildings other than residential showed a decrease of 15 per cent compared with February. However, the total permit valuation of all building construction showed an icrease of 19 per cent in March over February.

Any improvement in the building industry will be hailed as a factor of encouragement in the business situation. Under the present economy of high wages, and high prices for raw materials made necessary by high wages, new home buyers have been in a hesitant mood.

The need for new homes, however, as times goes on becomes more acute. Depression days have kept families in constrained quarters and Americans have felt this particularly because they are a home owning, home loving people. Anything that spurs the building industry to greater activity affects a wide range of production of commodities for builders call upon producers in varied lines for their supplies. By expansion in this field cities and towns grow and increase their tax base while a citizenship of responsibility and thrift develops.

As we see it—

(Continued)

Railroads as Buyers

It has been estimated that the railroads of the United States in normal times are buyers of 25 per cent of American goods produced. In this connection, an exceeding interesting article appears in another column discussing the importance of the railroads as buyers of the products of the State of Alabama. In 1937 "a year of sub-normal railway buying" their purchases in this one state totaled $31,208,000. Of this some $7,768,600 was for new equipment and $23,439,400 for fuel, forest products, iron and steel products and miscellaneous materials and supplies. Important purchases were made in 342 cities and towns located in 64 of the state's 67 counties. Thus, as the article points out "the sales sheets of hundreds of industrial and commercial concerns in Alabama are directly affected by railway purchases."

The railroads buy normally one out of every four tons of coal mined in America. In the lumber industry the railroad market normally absorbs one-fifth of the nation's output of forest products.

The importance of the carriers as buyers in the industrial life of Alabama is an indication of what they mean to the country as a whole.

Integrity of Our Currency

David Lawrence in the United States News says: "The patriotism of the hour is to warn the American people and arouse them to the attack being made on the American dollar and its purchasing power. The Congress of the United States has lately shown signs of independence. Surely no battle is more important than the preservation of the integrity of government credit and of the purchasing power of the dollar."

Congress must know that if another huge shot in the arm is administered and business does not move forward promptly another dose will have to be administered and in less time than it took for the effect of previous ones to wear off. If we are not to have outright currency inflation we had better get away from dangerous ground.

Resource Studies of Southern States

As our readers well know, the MANUFACTURERS RECORD. has, since its founding in 1928, constantly pointed to the South as possessing more advantages for industrial development than any other comparable section of the country—or of the world for that matter.

It is a land of boundless resources. Its forests, fields, and streams are only beginning to be developed to the full use of man. Its minerals are already a source of immense wealth but there remain great untapped supplies. It is blessed with a mild climate and a sturdy population.

All this we have said so often that it might seem useless to repeat it, but we like to think that by so doing, the time is brought that much nearer when the South will come into its own as a land of happiness and plenty for all its people, with a balanced economy of agriculture and manufacturing.

The trend of industry is toward decentralization, and in this trend lies the South's greatest opportunity. Many large producers and manufacturers are casting about for new locations—locations that are advantageous from the standpoint of availability of raw materials, accessibility to markets, good labor conditions, reasonable taxes, and other items making for economical operation. The South has much to offer in these respects.

On another page of this issue there is presented a study of the resources and industrial advantages to be found in the state of Alabama. This is the first such study in a series which will cover each of the 16 Southern and Southwestern states. Consisting of a large scale resource map and additional factual material on manufacturing, agriculture, climate, power, labor conditions, and taxation, these reports will highlight the main factors that have a bearing on industrial operations. The map, especially, should be valuable as a record of what each county of the state has in the way of major industrial source materials.

Other Articles to Come

Also in this issue we begin a series of articles designed to show the value of our railroads to other industries from whom they purchase supplies, equipment, and services.

Periodically we are frightened by announcements of experts that our petroleum supplies will be entirely exhausted within a few years, yet the total known reserves today are greater than ever before. This is explained, of course, by the fact that improved methods of prospecting have discovered new pools faster than the old ones could be used up. How long this situation will continue remains a question on which new light is shed by an article on oil resources and conservation which is being prepared by Mr. W. R. Boyd, Jr., Executive Vice President of the American Petroleum Institute, for early publication. At the same time we hope to have available material on the transportation of oil and oil products and on oil by-products and their uses which is being prepared by Mr. R. C. Tuttle of the Atlantic Refining Company and Dr. Gustav Egloff of the Universal Oil Products Company, respectively.

Several of the best known engineers for industrial plant design and construction in the South have consented to furnish the MANUFACTURERS RECORD with original material discussing recent trends and possibilities in the modernization and improvement of existing plants of all kinds. Their articles will appear in early issues and will be found of unusual interest to executives responsible for plant facilities.

Alabama's Railroad Industry

RAILWAY transportation has been a factor of first importance in the agricultural and industrial development of Alabama. The expansion of the state's cotton production, live stock farming, mining, manufacturing and commerce has been closely related to railway development.

Beginning with the crudely-built mule-powered 44-mile Tuscumbia, Courtland & Decatur Railroad more than a century ago, Alabama's railway mileage increased to 75 miles in 1850 and to 743 miles in 1860. In the next decade, despite the retarding influence of the War between the States, Alabama's railway mileage nearly doubled. The period from 1870 to 1900 was an era of rapid agricultural and industrial growth during which the state's railway mileage mounted from 1429 to 4219 miles, and at the close of that period of expansion every section of Alabama was served by railway transportation. Since 1900 more than a thousand miles of railway lines have been added. Today no fewer than twenty-nine railway companies operate 5300 miles of railroad in Alabama—enough to form twenty-seven railway lines reaching east-and-west across the state.

Every one of Alabama's sixty-seven counties is now served by one or more railway lines, and over this great steel network flows the lifeblood of Alabama, enroute to the world's markets—cotton and cottonseed, fruits, vegetables and dairy products, from thousands of Alabama farms; coal and ore from Alabama mines; logs and lumber, rosin and turpentine, from Alabama forests, and a great variety of raw and manufactured products from Alabama's numerous industries. In exchange for these products, inbound trains bring foods, clothing, machinery and thousands of other things to supply the never-ending wants of Alabama's 3,000,000 people.

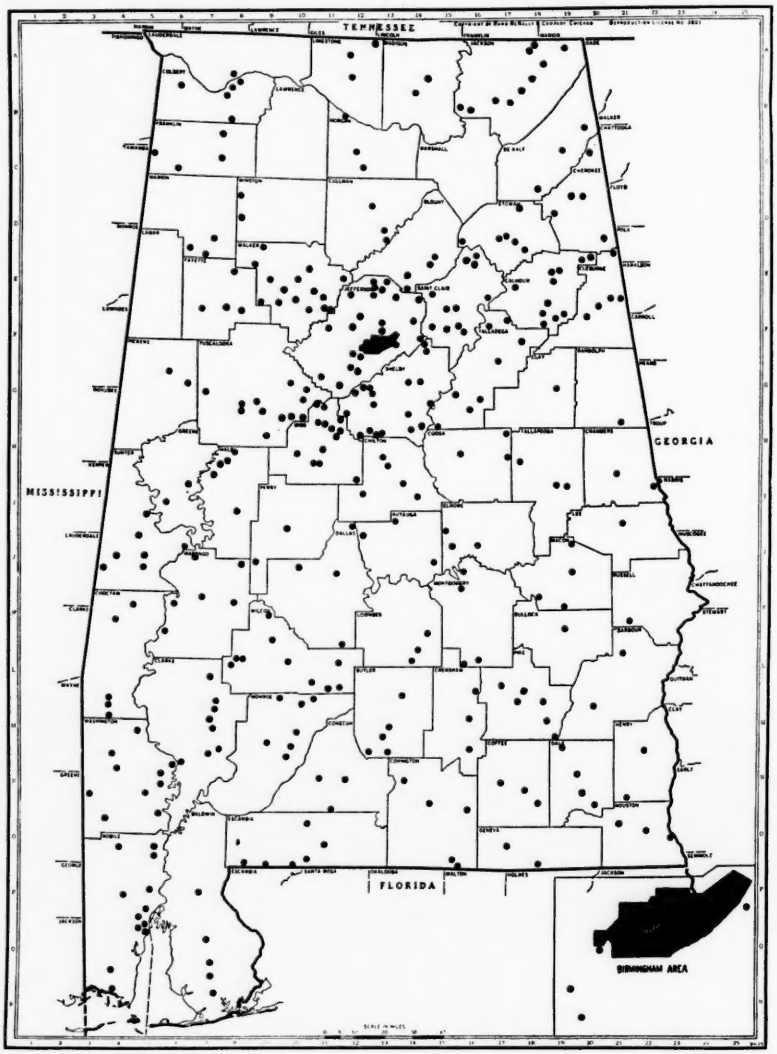
To perform this great transportation service, and to provide the people of Alabama with uninterrupted and dependable passenger and mail service, the railroads operate hundreds of passenger and freight trains daily, at an aggregate daily cost that runs into staggering figures. Just how much, even the statisticians of the Alabama Public Service Commission and the Interstate Commerce Commission are unable to say, because railway operating cost figures are not kept within state lines but overlap into adjoining states at dozens of points.

Of course, only a part of the cost of railway operations is incurred in the actual operation of trains. By far the larger part of railway expenditures is for replacements and upkeep of tracks and buildings, renewing and repairing locomotives and cars, operation of stations, shops and terminals, supervision and clerical work and so on. Besides there are taxes—local, state and federal—and interest charges on invested capital which must be met out of earnings.

How much does all this add up to? What is the total cost of financing, maintaining and operating Alabama's 5300-mile network of railroads? Again, exact figures are not available because, as stated, accounts of interstate railroads are not segregated by states, but an estimate, based upon payroll ratios, places the figure around 47 million dollars on the basis of 1937 operations and 55 million dollars on the basis of 1930 operations. However, these figures—great as they are—do not reflect the total expenditures of the railroads in Alabama. The railroads are pouring huge sums into the industries of the state. More than $56,500,000 was distributed by the railroads in Alabama last year—when their revenues and expenditures were unusually low—for fuel, materials, supplies, equipment, payrolls and taxes.

Alabama's stake in the railway industry is four-fold. First in importance is their value to the state as providers of dependable, uninterrupted economical service in the transportation of passengers, freight, express and mails. This service is of such fundamental importance in the social and economic life of Ala-

In Alabama the railroads purchased materials and supplies in 342 cities and towns located in 64 of the 67 counties in the state



bama that its value is beyond calculation.

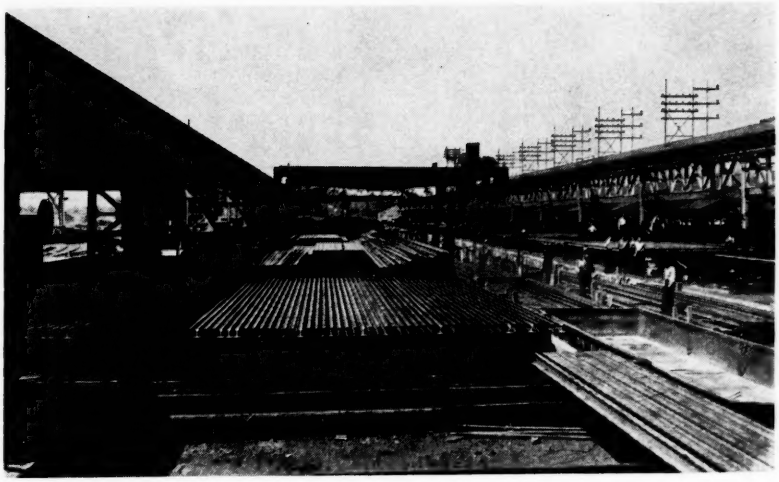
Second is the importance of the railroads as buyers of Alabama products. Railroads are great consumers of fuel, iron and steel and forest products. They annually pour many millions of dollars into Alabama for products of mines, forests, mills and factories—for use in maintaining and operating their lines not only in Alabama and other Southern States, but throughout the country. In 1937, a year of sub-normal railway buying, their purchases in Alabama totaled $31,208,000. Of this sum, $7,768,600 was for new equipment and $23,439,400 was for fuel, forest products, iron and steel products, and miscellaneous materials and supplies.

The widespread distribution of railway expenditures in Alabama for materials, supplies and fuel is evidenced by the fact that the railroads made important purchases last year in 342 cities and towns located in sixty-four of the state's sixty-seven counties.

The sales sheets of hundreds of industrial and commercial concerns in Alabama are directly affected by railway purchases, and the millions of railway dollars which flow into Alabama have the effect of providing employment to thousands of industrial workers in the state.

The railroads are the best customers of the coal mining industry. In the United States as a whole they normally buy one out of every four tons of coal mined. As the leading coal-producing state in the deep South, Alabama supplies millions of tons of coal annually to railroads throughout the cotton belt.

Alabama's great iron and steel industry has developed to its present proportions partly as a result of extensive railway purchases of steel rails, structural steel, bars, shapes, bolts, nut, rivets, tie plates, car wheels and numerous other iron and steel products.



Rail storage and loading yard at the Ensley Works of the Tennessee Coal, Iron and Railroad Company, Birmingham, Ala.

Railway purchases of iron and steel products in the Birmingham district in 1936—when railway buying was far below normal—totaled more than $8,000,000 and provided around seven million man-hours of work to Alabama workers. In years when railway earnings and credit are such as to enable the railroads adequately to maintain their properties and make needed improvements, their purchases of such products run into large figures.

The same is true of the lumber industry. The railway market normally absorbs one-fifth of the nation's output of forest products. Ranking as one of the largest producers of lumber in the South, Alabama is an important source of supply for cross ties, piling, poles and sawed lumber. Aggregate railway purchases of such products in the state run into millions of dollars annually, providing employment indirectly to numerous workers in the lumber woods and saw-mills of Alabama.

Alabama ranks first in the South and sixth among the states of the Union as a producer of railway equipment, principally freight cars. Thousands of freight cars are manufactured annually in Alabama, not including those produced in railway-owned shops. Railway purchases of new equipment, as already stated, brought $7,768,553 into Alabama in 1937.

Still other important railway expenditures in Alabama are made for the purchase of foundry products, petroleum products, paint, office equipment and supplies, stationery and printing, electricity, water, ice, dining car supplies, and for such miscellaneous items as telephone and telegraph service, office rent, insurance and advertising.

A third major contribution of the railroads to the economic well-being of Alabama is as employers of labor. A state by state canvass of active railway employes in July, 1937, placed the number residing and receiving their pay in Alabama at 16,572. Together with their families they comprise a group of around 65,000 persons. Moreover, railway employes are scattered all over the state and their earnings are constantly being poured into the channels of trade to stimulate every kind of business activity.

Thousands of these railway workers are home owners and taxpayers. Railroad men are among the best paid industrial workers in the state; they maintain a high standard of living; and they are among the most substantial citizens of the communities in which they live.

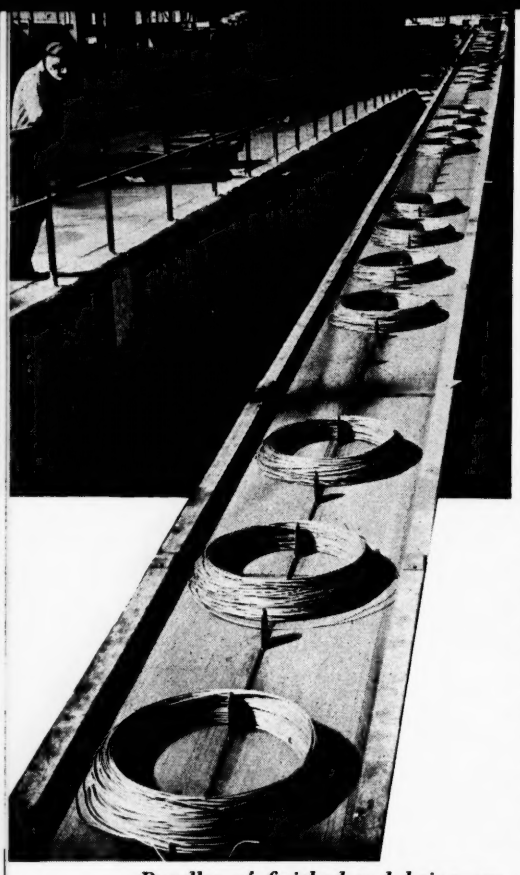
Railway employes are paid twice monthly, and on each of the twenty-four paydays last year the railroads paid out an average of $947,600 to their forces in Alabama, a total payroll for the year

(*Continued on page* 62)

Railroad ties stored in one yard at Montgomery, Ala.



Bethlehem Steel Opens New Mills at Sparrows Point



Bundles of finished rod being carried by conveyor from the finishing stands

WITH the opening of two new mills, a 56-in. hot strip mill and a continuous, four-strand rod and bar mill at Sparrows Point, Bethlehem Steel Company's thirty-five million dollar expansion program, started about two years ago, is rapidly nearing completion.

The new strip mill, covering about forty acres, of which fourteen are under roof, is designed for an annual output of 600,000 tons. About one-third of the tonnage will be used as breakdown coils in two cold-reducing units, for processing into tin plate, ternes, black plate and other tin mill products.

Standard steel frame construction is used in all buildings, which have been designed with particular regard to light and ventilation. Walls are generally brick and glass. Where hot operations are carried out the buildings have hip roofs covered with asbestos protected metal with glass window monitors. Where light is important, the buildings have flat, high and low bay roofs and insulated steel deck construction.

Slabs, the raw material for the strip mill, are made in the local blooming mill and are kept in a storage of 15,000 tons capacity where they are inspected and scarfed to remove seams and other surface defects. From the storage they are brought to three oil fired heating furnaces, each with a maximum hourly capacity of 165 gross tons of cold steel. Here the slabs are slowly brought up to rolling temperature, about 2250 deg., under carefully controlled conditions. They are then discharged to a roller table which carries them to a vertical edging mill followed by four roughing stands.

Leaving the last roughing stand the elongated slabs pass over a roller table, about 115 ft. long, which leads to the finishing train. As the temperature at this point is an important factor in the quality of the finished product, the roller table also serves as a temperature control table.

When the slabs have attained the desired temperature they are passed through a horizontal scale breaker, to remove the surface scale. They then reach the finishing train which consists of six stands. Here the thickness is rapidly reduced, while the length is correspondingly increased, so that a section 50 ft. long upon leaving the last stand ends up as a 750 ft. strip, or longer, according to the final gauge. Average time required in the last stands is only a little over 20 sec. As the strip emerges from the last stand its speed ranges from 1038 to 2100 ft. per min.

Leaving the finishing mill, the strip moves straight ahead over a delivery table to the coilers or to the hot sheet pilers. Two coilers, placed about 350 ft. from the last stand, are used for coiling strip up to 48 in. wide, and up to 300 lbs. per inch width. As soon as a coil is completed it is ejected from the coiler and placed on a coil transfer car which in turn deposits it on a double chain conveyor running to the coil storage of about 20,000 gross tons capacity.

When sheets are produced the strip is cut to length in a flying shear immediately beyond the last finishing stand. The shear is synchronized with the strip and cuts it to determined length, from 11 to 30 ft., in sections up to 48 in. wide and ½ in. thick. The cut strip then moves down the table to an electrically operated piler.

The hot strip finishing building is equipped with two continuous cutting-up lines for flats, consisting of levelers, trimmers, up-cut shears and pilers, conveyors and other accessories. Other facilities include a normalizing furnace, for sheets of certain requirements: a pickler with scrubber line; two single stand mills with accessories for skin rolling coils; a re-squaring unit, and four box annealing furnaces for sheets and coils.

Cold Reducing Mills

Two new cold reducing units have recently been placed in operation consisting of a 4-high 5-stand tandem mill with two single-stand 4-high skin pass mills and a 5-stand tandem mill with two 2-stand skin pass mills. With coil storage, continuous picklers, scrubbers, annealing equipment and other auxiliaries the new division occupies six buildings, with a combined floor space exceeding 200,000 sq. ft.

The plant is equipped to turn out tin mill black plate and, in conjunction with

(*Continued on page 58*)

Left—Two five-tandem cold reducing mills in the tin mill division. Center—Billet storage in new rod and bar mill. Right—Finishing stands and runout table with roughing stands in background



The Industrial Opportunities of Alabama

ALABAMA, familiarly known as the "Cotton" or "Lizard" state, was first reached by Fernando de Soto in 1540, but was never permanently settled until 1702 when Bienville, the French governor of Louisiana moved the seat of government from Biloxi to Mobile. The present site of Mobile was laid out in 1711. Fifty-two years later the territory was ceded to Great Britain, part of it being later ceded to Spain and annexed to Florida. Under the terms of the Louisiana purchase, this area was claimed by the United States and eventually organized in 1817 to become in 1819 the ninth state admitted to the Union.

Twenty-eighth in size with an area of 51,998 square miles, Alabama ranks fifteenth in population which in 1936 was estimated at 2,864,000, two-fifths being of the colored race.

Although Alabama has been predominantly an agricultural state like most of the other Gulf states, the trend toward industrialization is evident from the fact that whereas in 1920 nearly 60 percent of the employed people were engaged in agricultural pursuits, the percentage dropped to approximately 49 in 1930 and since then there has been a further decline to about 46 percent at the present time, while manufacturing now occupies almost one-third of the State's gainfully employed population.

The value of Alabama's manufactured products in 1935 showed an increase of $117,629,000 from the $253,211,000 in 1933 and exceeds the aggregate value of the State's agricultural crops by $160,916,000 which in 1935 totaled $209,924,000 and $246,701,000 in 1936.

The aggregate resources of all banks in 1936 was $294,577,000 of which $245,659,000 was individual deposits. The amount in savings totaled almost $78,000,000 and the capital stock invested in all banks was listed at $29,160,000.

Cotton and Textiles

THE soils of the State are of a character lending themselves to a diversification of crops that is evident from the increase in acreage and per acre yield of various crops during the last several years. However, Alabama still remains a cotton state with more than half the total acreage of its 257,000 farms producing about ten percent of the country's cotton and ranks fourth among the states in the production of both cotton and cottonseed. Over the course of years, there has been a shift in the acreage production from the southeast to the northwest, but even so cotton is still a major item of production in virtually every county. The manufacture of cotton textiles is the leading industry of the State and in 1933 had a production value of almost $70,000,000 and employed over 28,000 people in the sixty-nine cities and towns in which active mills are located.

Climate

CLIMATICALLY, Alabama tends toward the temperate and rarely has extremes of temperature, severe cold and freezing temperatures seldom lasting more than 48 hours. Although the summers are long, day temperatures usually are not excessively high, while the nights remain comfortable even in midsummer. The average annual precipitation is about 54 inches and the average temperature approximates 63° with a monthly average ranging from 48° in January to 80° in July.

Minerals

THE mineral resources of Alabama undoubtedly have been, apart from textiles, the greatest contributing factor in the industrial development of the State. Coal, iron, and a few other minerals are mined on a major scale; but there are several additional deposits of a varied assortment, not a few of which may justify further investigation for commercial production. The more important minerals, from a standpoint of current production, are marked on the accompanying map. Their total value was placed at more than $30,000,000 for 1935, the latest year for which details are available.

The total supply of iron ore is believed adequate for 150 years as compared with an estimated supply of only 35 years for the rest of the country, based on the present rate of consumption. Coal deposits are estimated to underlie an area of approximately 8,000 square miles. In no other state is coal, iron, dolemite, and limestone, necessary for making pig iron and steel, found within a radius of five miles.

Dolomites, occurring principally in Jefferson County, offer possibilities in mining magnesia and form a basis for a large chemical industry.

There is also an extensive distribution of ochres that have not yet been developed to the extent they would appear to warrant; red and yellow being situated in no less than twelve different counties.

Clays form one of the major industries of the state with plants located in almost every county. Various types of clays and shales are widely distributed including kaolins, china clays, fire clays, pottery and brick clays.

In addition to the foregoing and the minerals shown on the map, there are other minerals whose extent is not yet known or where industrial value may be in excess of the seemingly small quantity now available or produced. These are listed as follows:

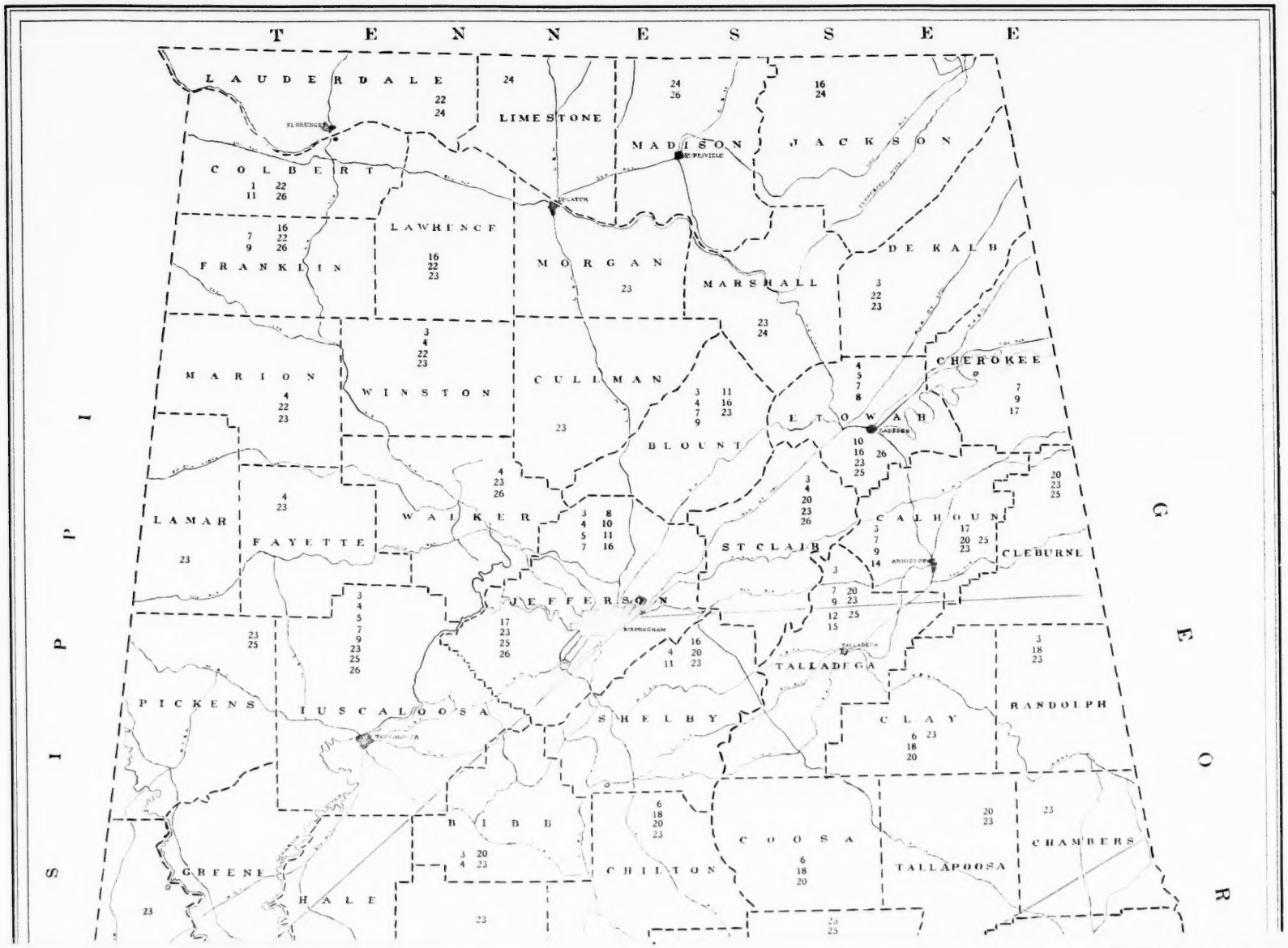
Arsenic	Lead
Barytes	Lead Sulphide
Copper	Manganese
Iron Pyrite	Manganiferous Ore
Gold	Zinc
Quartz	Quartzite

Timber

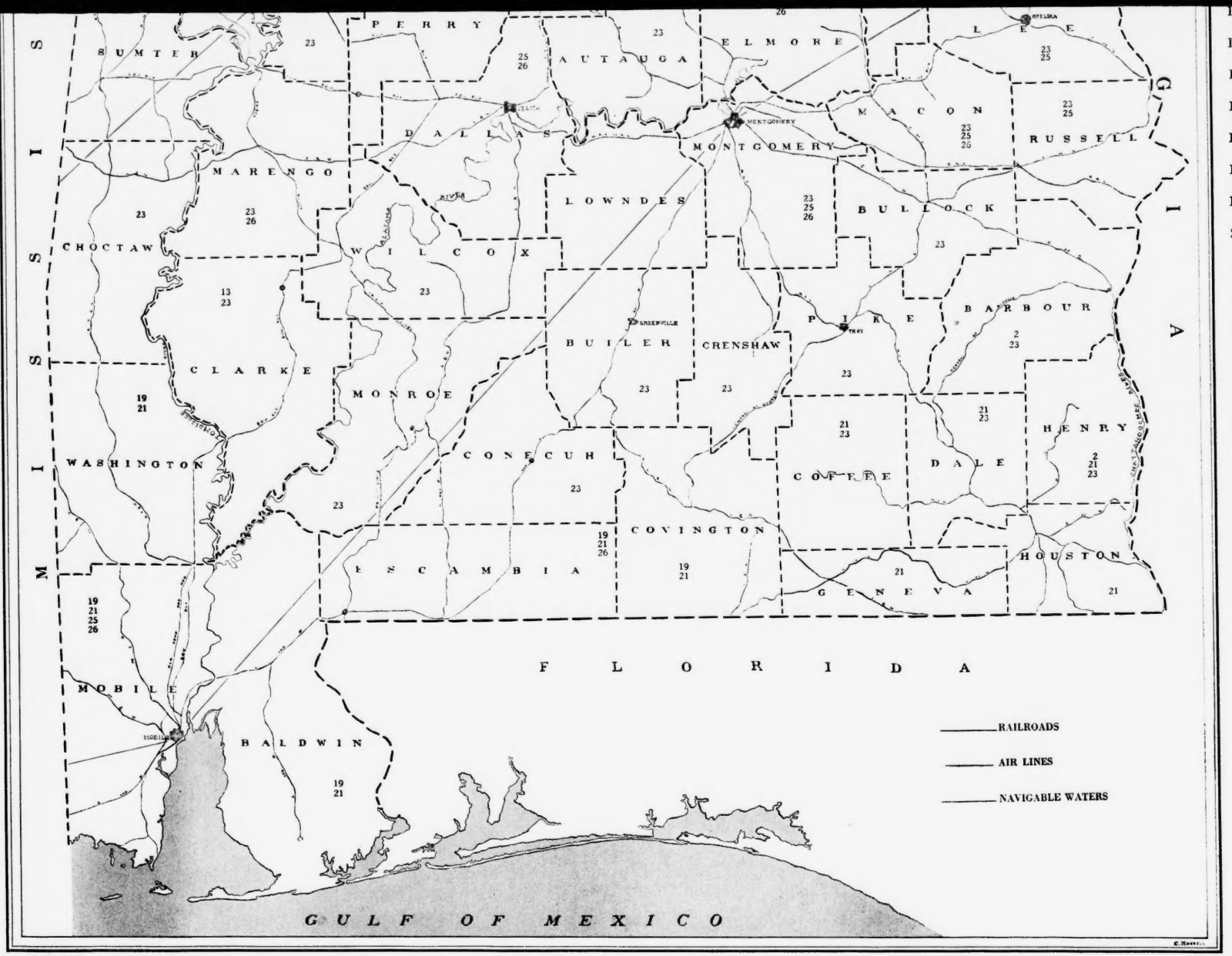
RICH in timber resources, there are approximately 23,000,000 acres of forest land within the confines of the State with an existing stand of timber estimated to

ALABAMA

Its principal raw materials and transportation facilities with facts on the reverse side pertaining to its industrial growth and opportunities for industry.



1. ASPHALT ROCK
2. BAUXITE
3. CLAY
4. COAL
5. COKE
6. GRAPHITE
7. IRON ORE
8. HEMATITE
9. LIMONITE
10. STEEL
11. LIME
12. GRAY ORE



13. FULLERS EARTH
14. TRIPOLI
15. MARBLE
16. LIMESTONE
17. SANDSTONE
18. MICA
19. NAVAL STORES
20. LONGLEAF PINE
21. LONGLEAF-SLASH
22. SHORTLEAF-HARDWOODS
23. SHORTLEAF-LOBLOLLY-HARDWOODS
24. MIXED UPLANDS HARDWOODS
25. NATURAL GAS
26. SAND, STONE AND GRAVEL

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be about 45,000,000,000 board feet. Of this amount 22,000,000,000 feet are in hardwoods, the balance comprising pine and a comparatively small quantity of other soft woods. Much of the slash pine is suitable for pulp wood, some of it being used already for this purpose in the manufacture of kraft at Tuscaloosa and Mobile. The southwest corner of the state embracing twelve counties and comprising one of the Southern Forest Survey units, has been estimated to contain a total of 39,779,000 cords of pulpwood on a productive forest land area of 5,729,700 acres.

Transportation

RAILWAYS cover every county and 5,128 miles of track provide a generous accommodation for both passenger and freight service between the widely scattered centers of population in the north central portion of Mobile in the far South. The highways, providing an important medium for passenger and commercial traffic, have been well developed and recent computations estimate the State system to exceed 6,500 miles of which close to 4,500 miles are surfaced.

In addition to these means of transportation, Alabama has extensive waterway arteries sufficiently developed to make conveyance of commercial products to the ocean and other ports a relatively simple matter. During 1937 the amount of tonnage carried on these waterways exceeded 2,000,000 tons. On the coastal line of 53 miles is situated one of the largest of the Gulf ports, Mobile. Docks have been built here with adequate facilities for an import and export trade comparable with those of north Atlantic coast ports. Mobile, connected with Pensacola by means of an intercoastal waterway, is the second port in the country to be operated under Federal license as a Foreign Trade Zone. Imports during 1937 totaled $12,890,619 compared with $7,054,302 in 1936 while exports increased from $32,806,892 in 1936 to $47,084,,088 in 1937. Details of the developments under way in connection with Alabama's inland waterway system were published in the March issue of the MANUFACTURERS RECORD.

Labor and Wages

THERE is an abundant supply of labor in the State and experience has demonstrated that it is highly intelligent, quick to learn and extremely loyal, while skilled labor in a variety of lines is available in the more industrialized centers. Ninety-eight percent of the people of Alabama are of American parentage; 99.99 percent are citizens by birth; and 87.5 percent were actually born within the boundaries of the State.

In keeping with the tendency of decentralization, many of the plants which have recently moved into the State have located in small towns, which makes it possible for the labor to live on farms and in surrounding territory. This eliminates the mill village and affords an opportunity of industrial employment to supplement farm income.

The wage scale in the State varies according to the industry and type of labor, the range being from 30 to 40 cents an hour for common labor to $1.25 and higher for skilled labor. The wage rate is that which prevails throughout the Southern section for a given type of labor.

Electric Power

THERE are ample electric power generating facilities in Alabama. The entire state is linked with a network of transmission lines interconnected with generating facilities in both this and adjoining states. The principal generating plants include:

	Installed	Capacity
6 Alabama Power Company hydroelectric units	580,000	horsepower
6 Alabama Power Company owned steam units	217,090	"
1 Alamaba Power Company leased steam unit	10,720	"
Tennessee Valley Authority hydroelectric units	351,400	"
	1,159,210	horsepower

Taxation

PROVISION is made in Alabama law whereby the state, county and municipality may exempt new industry from ad valorem taxes except taxes on the land on which the plant is located plus the school district tax. These exemptions may be granted at the discretion of the state, county and municipality for a period not to exceed ten years. Alabama is the third state in the Union on a basis of low per capita revenue from taxation.

Property is assessed by law at 60% of fair cash value and this is liberally construed. The city rates vary from low figures to as much as $1.50 per $100.00 of assessment.

Outside of municipalities, taxes are as follows:

State	$ .65
County	.30
School District	1.15
Total	$2.10

Raw materials, including slag, not exceeding one normal year's requirements, are exempt from taxation. Finished products are exempt for 12 months after production. A capital stock tax does not apply to foreign corporations but does apply to capital actually employed in Alabama. It starts at $5.00 for capital of $1,000 employed and runs to the highest figure of $100.00 on sums of $50,000 and over of employed capital. The corporation franchise tax is $2.00 per $1,000 of capital stock. In Alabama there is a state income tax of 3% on total net income of domestic corporations and on foreign capital but applies to foreign corporations only on net income from business done in Alabama.

ON the reverse side there is printed what may be termed a resource map of the State of Alabama. This is the first of a series of similar maps of the Southern states which the MANUFACTURERS RECORD plans to publish.

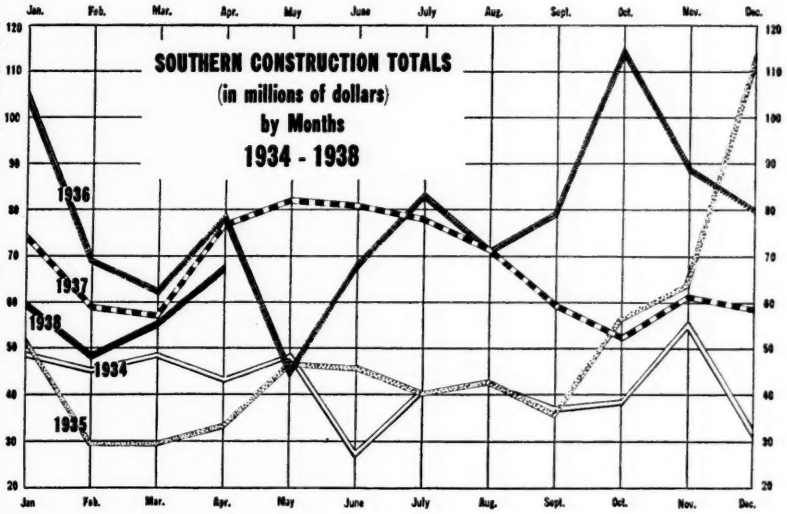
While the Blue Book of Southern Progress, our annual publication, discusses the resources of each Southern state, this is the first time we have undertaken to set forth in graphic form the salient facts about the Southern states; and we believe not only the information but the way of presenting it should prove of particular interest to industry seeking a new location as well as to the people of the states concerned. The text accompanying this will serve as a detailed explanation of the lines and figures shown on the map.

April Construction Awards Highest for Eight Months

APRIL'S construction activity in the South was the highest in the last eight months. Contracts let during the month, according to tabulations prepared from the reports of CONSTRUCTION'S daily service, mounted to over twenty-two per cent more than the previous month as increases in residential and public building and highway and bridge construction carried the total to $67,558,000, a figure which has not been equalled since last August.

Residential work shot upward to practically twice the figure for the preceding month as housing projects, mostly of an individual character, were placed under contract. Several outstanding group home building programs in Oklahoma increased the total by millions of dollars, as others in the District of Columbia, Louisiana and at other points in the South made major contributions toward the $11,586,000 total.

A sixty-seven per cent rise featured the highway and bridge field. For the second consecutive month all of the State Highway departments either asked or received bids, let contracts, or were weighing the results of previously opened proposals for important parts of their 1938 programs. The Bureau of Public Roads opened bids for a Blue Ridge Parkway project. Numerous cities and towns, as well as various counties, were actively making preparations for road construction programs, or actually letting contracts. A municipal bridge at Norfolk, another at Roanoke, and a large asphalt paving contract at Baltimore were among these.



Most of the forty per cent advance in public building was accounted for by a series of modestly sized contracts awarded by the Federal, state, county and municipal governments for schools, hospitals and similar structures. The Ocean View school, to be built near Norfolk, is typical of one of the largest of this type of project.

(*Continued on page 46*)

Southern Construction Activity

	Contracts Awarded April 1938	Contracts Awarded April, 1937	Contracts to be Awarded April, 1938	Contracts to be Awarded April, 1937	Contracts Awarded First Four Months, 1938
GENERAL BUILDING					
Apartments and Hotels	$2,686,000	$4,437,000	$4,666,000	$4,648,000	$12,921,000
Association and Fraternal	51,000	223,000	181,000	731,000	744,000
Bank and Office	876,000	1,216,000	6,785,000	4,948,000	4,960,000
Churches	749,000	487,000	1,710,000	1,819,000	2,316,000
Dwellings	11,586,000	$13,606,000	52,264,000	8,019,000	26,680,000
Stores	2,257,000	3,690,000	3,259,000	4,021,000	13,415,000
	$18,205,000	$23,659,000	$68,865,000	$24,186,000	$61,036,000
PUBLIC BUILDINGS					
City, County, Government and State	$9,708,000	$ 5,930,000	$44,508,000	$23,038,000	$29,249,000
Schools	4,816,000	4,164,000	21,139,000	20,956,000	20,300,000
	$14,524,000	$10,094,000	$65,647,000	$43,994,000	$49,549,000
ROADS, STREETS and BRIDGES	$19,499,000	$18,359,000	$37,208,000	$140,204,000	$57,878,000
INDUSTRIAL and ENGINEERING					
Drainage	$1,243,000	$ 1,099,000	$25,308,000	$3,730,000	$8,188,000
Filling Stations and Garages	444,000	714,000	579,000	653,000	1,725,000
Industrial Plants	12,086,000	20,481,000	22,849,000	82,208,000	42,832,000
Sewers and Waterworks	1,557,000	2,341,000	44,647,000	4,579,000	9,036,000
	$15,330,000	$24,635,000	$ 93,383,000	$ 91,170,000	$ 61,781,000
Total	$67,558,000	$76,747,000	$265,103,000	$299,554,000	$230,244,000

Ceramic Raw Products of North Carolina

BY

H. J. Bryson

State Geologist of North Carolina

THE ceramic raw products of North Carolina are distributed principally through the western and Piedmont sections of the State. In the eastern or coastal plain section, however, there are numerous deposits of clays suitable for the manufacture of brick and tile.

The State has been an important producer, for many years, of feldspar, residual kaolin, high-grade quartz and quartzite, magnesium talc, pyrophyllite, kyanite, and olivine. In addition, there also occur numerous deposits of sedimentary clays, spodumene, and volcanic ash.

The feldspar deposits of the State are confined largely to the mountain counties of Madison, Yancey, Mitchell and Avery. However, there are deposits which have commercial possibilities, but which have only been prospected to a limited extent, that occur in Swain, Jackson, Macon, Rutherford, Wilkes, and Ashe counties.

The feldspars which thus far have been produced are principally the potash and soda spars. These spars have a wide variety of uses and are considered a very high-grade material.

The production of crude feldspar in 1937 was 94,595 tons, with a value of $538,567. The average price per ton was $5.15. There are approximately fifty producers in North Carolina.

The production of ground feldspar in North Carolina in 1937 together with that of Tennessee amounted to 90,696 tons with a value of $1,239,149. The average price per ton was $12.10. At present there are three grinding plants in operation within the State, and two grinding plants in Eastern Tennessee that are supplied with North Carolina crude spar.

The residual kaolin deposits of the State are confined largely to Yancey, Mitchell, and Avery counties. However, there are small deposits in Macon, Jackson, Haywood, and other counties.

During the past few years some very large deposits of high-grade clay have been discovered in some of the western counties. Some of the deposits contain millions of tons of recoverable clay. Since the discovery of these large deposits, the U. S. Bureau of Mines and the Tennessee Valley Authority have greatly improved the methods of beneficiation. These new processes have produced a clay comparable to the English clays. Two plants have been constructed recently to produce clays by these new methods. This means that the clays in the future will be used more extensively and in a greater variety of products.

The production of residual kaolin has been small, which has largely been on account of the non-uniform nature of the finished product. However, with new methods and with new plants employing these methods, there should be considerable increase in the production in the near future. The total value of production is approximately $200,000 annually.

Distributed throughout the Piedmont and western sections of the State there are deposits of quartz and quartzite of such purity as to be used in the manufacture of ceramic products. Some, of a very pure grade has been shipped to northern consumers to be used in the manufacture of glass bricks, while the low iron content of the quartz makes it a valuable product.

The kyanite deposits of the State are confined principally to Macon, Yancey, Mitchell, and Buncombe counties. The deposits may be divided into two classes: those deposits that are more or less lenticular and limited in extent, which contain a rather high-grade material; and, the large extensive deposits known as kyanite schists. In these latter the crystals of kyanite make up from ten to forty per cent of the rock mass. The production, so far, has been small, but new uses for the material will require a large production.

Kyanite has certain properties that make it a valuable material for the manufacture of refractory products, especially is this true of refractory brick and saggars.

The peridotite rocks of the Eastern United States reach their maximum development in Western North Carolina. Associated with these rocks is olivine, an iron magnesium silicate. This mineral occurs in large dikes which can be traced at intervals across the entire western part of the State.

Most of these deposits, however, contain small crystals of talc which are detrimental to its use in refractory materials. Occasionally there are deposits which have a low talc content. Two such deposits in Jackson county near Balsam, have supplied most of the material shipped from the State.

For the steel industry the olivine is quarried and cut into blocks 6 to 8 inches square and 12 to 16 inches long. For the manufacture of refractory brick little attention is paid to the dimensions of the blocks as the material is ground and mixed in varying proportions with magnesite. So far, very good results have been obtained from the use of olivine brick in certain types of furnaces.

The mineral pyrophyllite is a hydrous aluminum silicate which has physical properties similar to talc. During the past few years, however, pyrophyllite has been used in the manufacture of ceramic materials, especially white tile.

The deposits of pyrophyllite are confined to Moore, Randolph, and Chatham counties. These are considered the only commercial deposits of pyrophyllite so far discovered in the United States.

At present there are five mills in production, producing from twenty-five to thirty-five thousand tons annually.

The magnesium talc which is now being used to some extent in the ceramic industry is confined principally to Cherokee county in the extreme western part of the State. The talc in this county is associated with the marble and limestone; and, on account of its physical properties it compares favorably with the imported talcs. In addition there are small isolated deposits associated with the basic igneous rocks, the talc which is used especially as foundry facings, in the manufacture of

(*Continued on page* 56)



Kaolin pit, Harris Clay Company, Penland, N. C.

Industrial Use of Glycerine

BY

Georgia Leffingwell, Ph. D.

LITERALLY a product of a thousand uses, the extent and diversity of glycerine applications touches almost every phase of American industry.

It was a young Swedish chemist, Dr. Karl Wilhelm Scheele, who first discovered glycerine as far back as 1779. But for nearly a century and a half after its discovery it was regarded as little more than a scientific oddity because of its strangely varied properties. It is those same properties which in the hands of modern scientists adapt glycerine to a constantly growing list of industrial and commercial medicinal, and other uses.

The bulk of the world's supply of glycerine today is obtained in the process of making soap. In producing soap from the natural fats and oils, the glycerine in these products is set free. Then the glycerine, itself a natural product, is further refined and purified for the market. Approximately 15 tons of soap must be produced to yield a single ton of glycerine.

Reviewing rapidly the physical properties of glycerine will indicate its adaptability and versatility. A syrupy, colorless, sweetish liquid, its most outstanding characteristic and one especially significant in view of the climatic conditions of the Southern states, is its unique power of absorbing and retaining moisture from the air and under certain conditions to absorb up to fifty per cent of its own weight in water. In preparations, therefore, where the moisture content must be maintained or where excessive drying means depreciation, this hygroscopicity makes glycerine highly valuable.

The exceptional solvent powers of glycerine are another important consideration, while it is itself soluble in water and alcohol in all proportions. Also, it does not turn rancid and has a definite preservative action in preparations of which it is a constituent. It is not corrosive and does not affect metals.

The fact that glycerine is very stable also gives it added usefulness for the Southern manufacturer or for products intended for Southern distribution. It has a high boiling point (290 degrees C), which does not permit evaporation even under extreme climatic conditions.

Its safety is an essential consideration not only in food processing but in any products coming in close and continuing contact with the skin, especially as scientific research has not yet conclusively determined to just what extent poisonous or deleterious substances may be absorbed into the body through the skin.

With these varied characteristics, it is not surprising that there is hardly a branch of manufacture in which glycerine is not used, either as a constituent of the product itself or as an ingredient of some specialty designed to facilitate processing or improve the finished product. Among the uses enumerated by the U. S. Department of Commerce are:

Nitroglycerine and low freezing dynamite compositions, soaps, food preparations, flavoring and preserving tobacco, general solvent, litharage and other cements, waterproofed and other papers, increasing viscosity of liquids, special lubricant, glycerophosphates, rubber substitutes, plastics, solvent in dyeing and printing textiles, size in making felt and in treating fabrics.

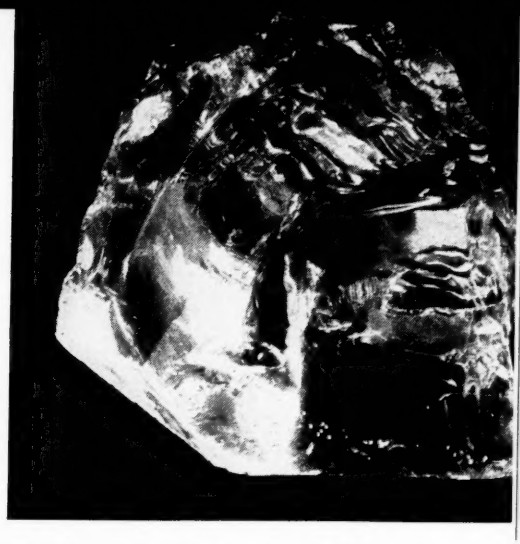
The use of glycerine in tobacco processing is one of the major industrial applications of this fluid. Today it is almost universally regarded as indispensable in the manufacture of cigarettes because of its properties of absorbing and retaining moisture and preventing dryness.

The textile industry generally, and especially the dyeing, printing and finishing of silks and rayons, is another important application. The two principal functions of glycerine in this field are first, its high value as a dispersing agent, and second, its hygroscopic properties which make it of value in absorbing and retaining essential moisture in the various operations.

Glycerine serves as an excellent medium for wetting out the dry dye-stuff powders; in the ageing, it acts to absorb moisture from the age-er, which is essential for the clear development of colors; in steaming printed fabrics, its hygroscopic properties serve to absorb from the steam the moisture necessary to properly fix and fasten the printing colors used.

To the paper manufacturer, glycerine meets the industry's need for an effective softening agent or plasticizer. Its use therefore is growing with the increasing demand for coated papers for various purposes and the constant development of new types of paper such as surface-sized papers, paper towelling, waxed wrappers, etc., in whose processing such a softener is essential.

In the manufacture and use of rubber and latex covered or impregnated materials, again, glycerine, because of its hygroscopic nature, helps to retain flexibility and retard brittleness and drying out.



Glyptal resin used for automobile and other protective coverings

Still another industrial application which is steadily growing in importance is in the making of cellophane and other transparent cellulose wrapping sheets, to impart and retain the necessary flexibility.

Of particular interest to the South is the utilization of the advantages of glycerine in air conditioning. Refrigeration compounds find it useful because of its low freezing point. Glycerine and dilutions of glycerine and water are standardizing fluids in certain types of viscosimeters. Since it is not soluble in most oils nor in gasoline, it is valuable as an oil and gas resistant lubricant.

In addition to the industrial utilization of glycerine as such, too, the glycerine compounds, the "glyptal" resins, are becoming increasingly important. These synthetic resins are made by the interaction at high temperatures, between glycerine and phthalic anhydride or acid. The addition of a third ingredient or ingredients can modify the resin to give almost any desired properties. The glyptals, therefore, are finding extensive use as coatings and impregnations in textile, rubber, paper and similar industries. Particularly important is their use in the newer automobile and other protective coatings which are supplanting older forms of lacquer.

Practically all cosmetics use glycerine on account of its penetrating properties and its exceptional power as a solvent, while because of its protective function in absorbing and retaining moisture, it is extensively used in preparations designed to keep the skin soft and smooth and prevent drying.

Glycerine, too, has a steadily growing place in the food industries, particularly in the processing of many commercial products. Commercial food manufactur-

(*Continued on page* 58)

Iron, Steel and Metal Market



AT the close of April the operating rate of steel companies was at 32 per cent of capacity. A year ago it was 92 per cent. The operations of some of the independent companies have been on a slightly better basis than the larger concerns but the difference has not been material. Some observers find the sentiment slightly better than it has been recently although it has not by any means reached the point to be described as optimistic.

New orders for fabricated structural steel in March, according to information released by the American Institute of Steel Construction, showed an increase over the two months preceding. Taking the yearly average of 1928-1931 as normal, shipments during the first quarter of 1938 were 38.2 per cent of normal with March showing 43.1 per cent of normal.

At the quarterly meeting of the United States Steel Corporation it was announced that the net loss from the first quarter's operations was $1,292,000 compared with a net profit of $28,561,000 in the first quarter of 1937. The regular quarterly dividend on the company's preferred stock of $1.75 was declared. The chairman, Mr. Stettinius, stated that notwithstanding the fact that shipments had declined materially the number of employees totaled 211,833 which was only 14 per cent less than the number of employees a year ago. Owing to reductions in work schedules, however, the payrolls were 34.6 per cent less.

The Inland Steel Company at its meeting reported a consolidated net profit of $923,000 after all charges except federal surtax on undistributed profits which represented 58 cents per share on the capital stock while a year ago for the first quarter the profit after similar deductions was $3.34 per share.

Chicago reported orders during the latter part of April as being above the weekly average so far this year. Operations likewise showed some activity owing to the release of rail orders while automotive demand was slightly improved.

Jones & Laughlin each month this year has made a better showing in production, having increased to 35 per cent during April from a low of 21 per cent in January.

At the meeting of the Youngstown Sheet & Tube Company, Chairman Dalton reported operations slightly over 30 per cent. The important improvement to the Company's tin plate mill at Chicago has been postponed in view of the uncertainty of the times. The chairman said: "We were hoping for more relief from taxes than now seems likely, and with a proposed increase of expenditures on the part of the government, increasing further the deficiencies in the budget, continued harassing of business by further new laws and regulations, there will be little to expect from that source to increase confidence, which is first absolutely necessary to increase consumption on the part of private enterprise. Surely continuing expenditures and the imposition of higher and higher taxes will not do it.

"We, therefore, feel that we still have difficult times ahead but also still believe that the country will work out of its difficulties in time and that continuing to do the best we can until that happy condition again prevails, should demand our earnest attention."

As mentioned in another column, industry generally has taken encouragement from the more reasonable attitude of labor in voluntarily, in some instances, accepting wage cuts. Another item of encouragement was noted in the results of an NLRB election held at the plant of the American Rolling Mill Company. In a release of the information it is stated "This is the first time the results have been unfavorable to the organization which requested the election in the plant of any major steel company and the outcome is regarded as significant." The election was held at the Butler Mill and the results showed defeat for the CIO in the tabulation of employees voting 1,243 to 402 against naming SWOC their exclusive bargaining agent. It was the climax of a long period of campaigning by CIO. No other union or plant was involved.

Inquiry from the Southern Railway for 5000 freight cars requiring possibly 65,000 tons of steel was noted with satisfaction. The production of steel rails, according to the American Iron & Steel Institute, in 1937 was the largest for any year since 1930.

The growth of the output of steel welding wire has been rapid since 1932. In that year it totaled 24,000,000 pounds. In 1934 production tripled that amount and in 1937 it was 155,000,000 pounds.

Birmingham continues as a bright spot in the steel picture, maintaining its steady rate of production considerably above the national average. Orders as well as shipments are maintaining a fair rate.

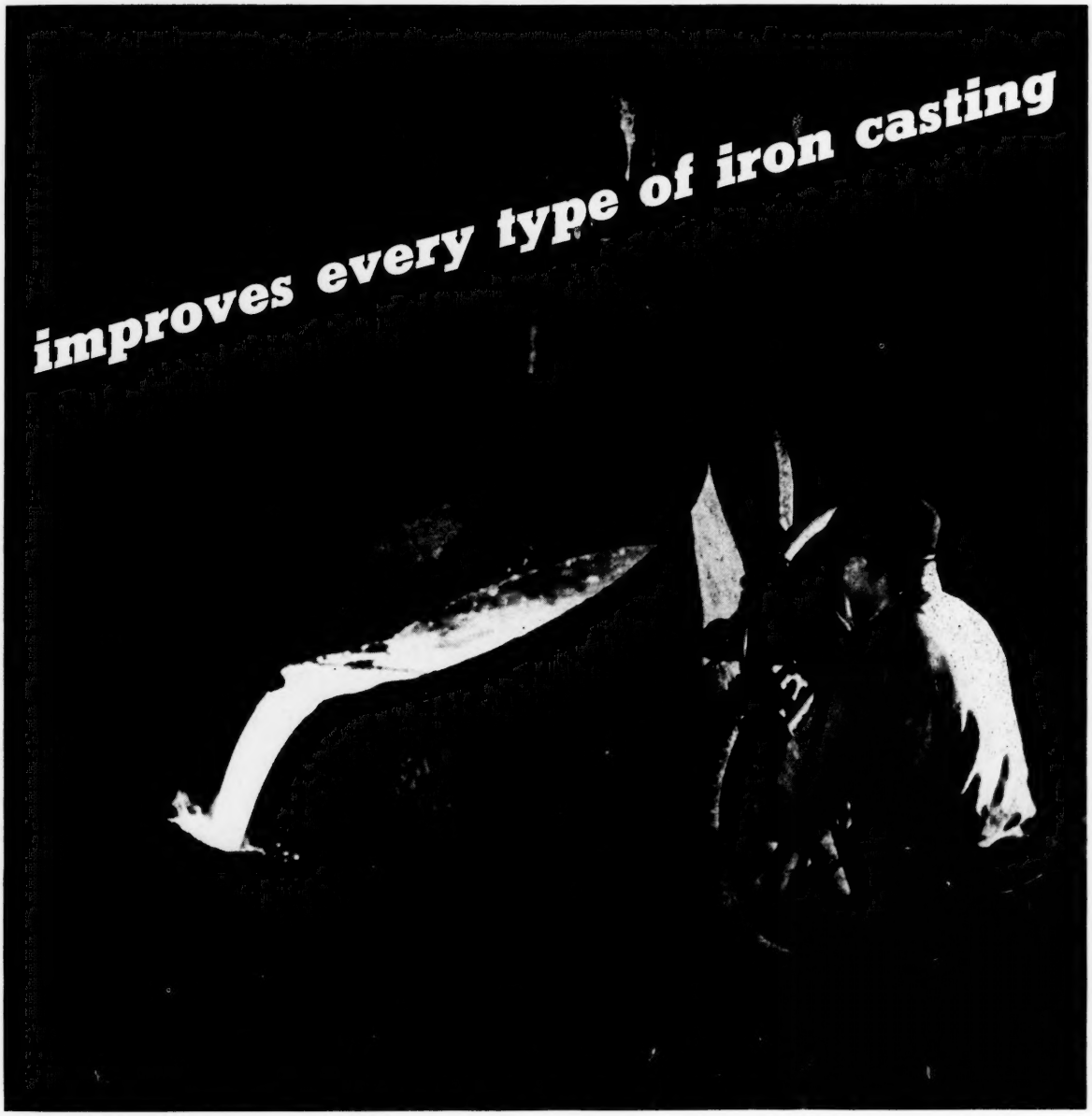
In a speech at Birmingham, Robert Gregg, President of the TCI, predicted a brilliant future for the Birmingham district. He declared that there should be little fear that the present high level of production would be lowered and gave as a reason why Birmingham had maintained its present level of operation while other steel production areas dropped to 33 per cent of capacity, was because the quality of the district's products are the highest in the United States. Birmingham in his opinion may look forward to an even more brilliant future in the development of diversified industry.

The Bethlehem Steel Corporation is said to secured contracts on the Grand Coulee dam approximating one and three-quarter millions. They involve 8,200 tons. Other contracts taken by Bethlehem include 4,250 tons of reinforcing bars and 1,850 tons of sheet piling from the U. S. Engineer's Office at Los Angeles, besides 2,800 tons of structural steel for the Potomac River bridge at Hancock, Md.

Eugene G. Grace, President of Bethlehem Steel Corporation, has announced that their company oprates at a profit when running between 35 and 40 per cent of capacity. The first quarter's net profits after all deductions including depreciations were $994,908, while operations during the period were at a rate of 34.6 per cent. Steel business and ship building activities both contributed to this favorable showing and both were in the black. Unfilled orders March 31st were reported to be $99,934,192.

The Harnischfeger Corporation reports orders for 20 of its new steel houses to go to Rochester, New York. The contract was recently closed, amounting to $500,000, at Philadelphia and calls for 436 units. Harnischfeger reports having sold 620 houses since the first of the year.

SILVERY MAYARI ALLOY IRON



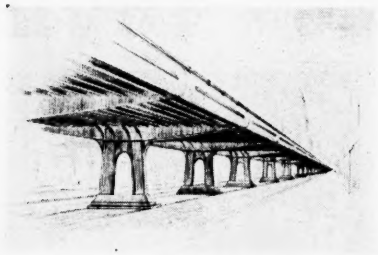
SILVERY Mayari Alloy Iron is an exclusive Bethlehem product, of the pig-iron type, which imparts so many superior qualities to iron castings as to be of value in castings for practically every kind of service. Silvery Mayari contains nickel, chromium, silicon and manganese in the correct proportions to give many desirable qualities.

A small percentage of Silvery Mayari in the cupola mixture results in high tensile strength, uniform hardness on both thick and thin sections, a dense and even grain structure, excellent machining qualities and high resistance to wear. At the same time, foundry operation is simplified. Silvery Mayari is already being used in foundries throughout the country, and its use is increasing by leaps and bounds.

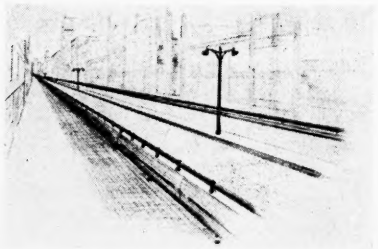
The machine-tool industry is a big consumer of this remarkable alloy iron. Two prominent automobile companies are using it in cylinder blocks. A multitude of other types of castings, ranging from gears the size of your hand to 12-foot-diameter paper-drier rolls, are being made better and at lower cost with Silvery Mayari.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL



Good Roads and Motor Transport



Elevated Highways

The two sketches illustrated above were those included in the design of Hazelet and Erdal, consulting engineers, Chicago, Ill., which was awarded first prize in the elevated highway design competition sponsored by the American Institute of Steel Construction. The second prize went to Madigan-Hyland, consulting engineers of New York—E. H. Praeger, chief engineer and C. F. Lloyd, architectural designer. The third prize was won by Walter W. W. Jones, an employee in the Department of Works, Borough of Manhattan, N. Y.

The competition was the outgrowth of concerted opinion by leading traffic authorities that the only permanent solution of the joint problem of accidents and congestion is through the construction of major traffic routes particularly adapted to the operating characteristics and potentials of the automobile. Thus, has been projected a type of highway design embodying the following physical and operating features. (1) It provides for a complete physical separation of streams of traffic moving in opposite directions. (2) It eliminates any direct access to abutting property. (3) It provides for an elimination of all intersections through a complete and continuous separation of grades. (4) It provides decelerating lanes for vehicles slowing to leave the highway at specially provided exits and accelerating lanes for vehicles entering from specially provided entries.

Traffic routes of this type of construction have already demonstrated their ability to carry safely large volumes of traffic through congested districts at open highway speeds. Several cities are now projecting comprehensive systems of this type and many others will undoubtedly follow.

I. C. C. Motor Bureau's Safety Regulations

Speaking recently before the fifth annual regional meeting of the American Association of Motor Vehicle Administrators, Mr. H. H. Kelly, chief of the Safety Section of the I. C. C's Bureau of Motor Carriers, stated that before long the I. C. C. will put in effect a program whereby responsibility will center upon the heads of the various trucking and bus companies. Flagrant violations of the new regulations would possibly result in suspension or even revocation of the offending concern's rights of participation in interstate commerce.

Regulations relating to drivers' qualifications, rules of the road, carrier equipment and accident reports are already in force in forty of the states. The newest requirement necessitates bus and truck companies filing detailed reports with the I. C. C. of all accidents resulting in damages in excess of $100. A further regulation, effective July 1, will require each driver of a bus or truck engaged in interstate commerce, to keep a detailed account of each 24 hour period. The purpose of this latter is to combat driver-fatigue, one of the most vital of present day safety hazards. No driver is to be allowed to drive more than twelve hours in each 24 or be on duty for more than fifteen hours at one stretch.

The Blue Ridge Parkway

The Blue Ridge Parkway connecting the Shenandoah and Great Smoky Mountains national park which is under construction, is a distinct departure from the usual type of highway. A continuation of Virginia's Skyline Drive, plans provide for the new highway to stretch for 500 miles through southwest Virginia, part of North Carolina, and thence to Sevierville just east of Knoxville, Tenn.

Conceived and built largely for the benefit of vacationing motorists, special efforts have been made to avoid populous centers and incongruous sights that might impair the scenic view. To this end, viaducts, tunnels and other means have been introduced to provide a guarantee of non-interference from the ordinary highway system's traffic. Bridges, tunnels, filling stations and other necessary buildings will be constructed of local material and erected at strategic points..

Like an elongated park, the right of way will average 800 feet in width. The roadway will be 30 feet wide with 19 extended recreational areas conveniently spaced en route. Though some parts will be more than a mile above sea level, the average elevation is 2,500 feet.

Extended through some of the most majestic country in the East, particular attention has been given to the grading in order to eliminate the steep climbs and sharp curves usually encountered on mountain roads, and more than 25 per cent of the preliminary work already is done. At the present time, over 100 miles of construction have been completed — approximately 55 miles in Virginia and about 50 miles in North Carolina, leaving about 30 miles intervening to complete a 135 mile stretch part of the distance from Roanoke, Va., to Asheville, N. C.

Construction of the 30 foot pavement by private contract is under supervision of the U. S. Bureau of Public Roads and has been financed by appropriations of P. W. A. funds for the entire project amounting to nearly ten million dollars. It is estimated the total cost when completed will be in the region of twenty million dollars or about forty thousand dollars per mile of surfaced roadway, though it should be pointed out that this sum includes the cost of landscaping, buildings, land purchases, etc. In some sections excavation involves removal of as much as 80,000 yards to the mile.

South Carolina Permits Increased Weight and Width of Motor Vehicles

The South Carolina legislature last month passed a bill which is now before the governor for approval that will permit the use of wider and heavier motor traffic on the state's highways.

The existing law which recently was upheld as constitutional by the U. S. Supreme Court, limits motor vehicles to a width of 90 inches and a weight of 20,000 pounds. Pending investigation, it was decided to hold in abeyance any enforcement of the law. The new bill, increasing the width to 96 inches and the weight to 40,000 pounds was stated by proponents to be vital to farmers of the coastal region in getting their produce to market.

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WHEN you travel, thoughts keep turning back toward home. The folks there are thinking of you, too. Then it's good to hear the sound of warm, familiar voices by *telephone*. One quick, convenient call brings peace of mind *both* to you and to them.

Such calls cost little during the day and much less nights and Sundays. Then you can telephone about 100 miles for 40c,* about 150 miles for 50c,* about 425 miles for $1.* Rates between specific cities are shown at the right. Many more are listed in the front of your telephone directory. *Keep in touch by telephone.*

HERE'S HOW LITTLE IT COSTS TO TELEPHONE:

Between these points		Day except Sunday*	Night and Sunday*
Boston, Mass. . . .	Hartford, Conn. . .	$.50	$.35
Chicago, Ill. . . .	Indianapolis, Ind. .	.75	.45
Butte, Mont. . . .	Spokane, Wash. . .	1.00	.60
Milwaukee, Wis. .	Pittsburgh, Pa. . .	1.50	.90
Atlanta, Ga. . . .	Kansas City, Mo. . .	2.00	1.20
St. Paul, Minn. . .	Salt Lake City, Utah	3.00	1.80
Los Angeles, Calif.	Des Moines, Iowa .	4.00	2.50
Portland, Ore. . .	Memphis, Tenn. . .	5.00	3.25
Washington, D. C.	Reno, Nev.	6.00	4.00

**3-minute station-to-station rates. Reduced rates are in effect from 7 P. M. to 4:30 A. M. every night and all day on Sunday.*

Lumber



News of the Month

Southern Pine Trends

Southern Pine production, according to the weekly *Trade Barometer* of the Southern Pine Association, embracing reports from some 120 mills, declined 7% during the first three weeks of April, as compared to March. Shipments in the same period declined 21% from March; while orders dropped 14% under March. As compared to April 1937, production is down 24%, while shipments have decreased 26%, and orders have decreased 22%.

For the 16 weeks ended April 23, 1938, production shows a decline of 16% from the like period a year ago; shipments a decline of 19%; and orders a decline of 14%. The first third of 1937, however, was the best since 1930, production having approached 85% of its 1929 level, shipments 88% of 1929, and orders 83% of 1929. This exaggerates the comparison with 1938 and causes conditions this year to appear abnormally depressed. When compared with the average for the like period in the six years 1931-1935, the 1938 record to date shows these gains: Production 23%; shipments 18%; orders 14%. The current year to date also shows a much better record than 1935, with these gains: Production 20%; shipments 17%; orders 16%.

The latest Barometer, that for the week ended April 23, shows this improvement over the low point of 1938 reached in week ended April 9: Production increase less than 1%; shipments up 24%; and orders up 11%.

The large pickup in residential construction during March, added to the demand yet to materialize under FHA mortgage applications and numerous planned large scale housing projects, gives promise of a rising trend in lumber demand. In March, according to F. W. Dodge Corporation, contracts for home building were let in the 37 states east of the Rocky Mountains amounting to $79,396,000. This is an increase of 98% over February and of 119% over January, 1938, falling only 12% behind March, 1937, which had the third largest monthly total for that year.

Southern Pine stocks, according to the latest Southern Pine Association Barometer, increased 5% during the past month; are 31% above a year ago when stocks were close to a record low level, and 10% above normal. Unfilled orders have decreased 8% during the past month. Average price f.o.b. mill is up about 2% over January, but down about 25% from a year ago.

With ample, well-balanced stocks, relatively low prices, and a continued sound statistical position despite recent declines, the Southern Pine industry should very shortly show some recovery from its recent low marks and benefit notably from the expansive building program now rapidly developing throughout the country.

Forest Resources of the North Arkansas Delta

The Forest Resources of the North Arkansas Delta is the descriptive title of the U. S. Southern Forest Survey's newest publication. Although chiefly in Arkansas, the territory within this survey unit includes portions of Missouri, Tennessee, and Kentucky.

Though most of this area was originally covered with a dense virgin hardwood forest, its high agricultural land value, its proximity to the northern markets consuming hardwoods, and its excellent timber stand, made it one of the first areas of the Mississippi River Delta to be logged commercially. Consequently, at the present time, out of a total land area of over 6,715,000 acres, only some 2,613,000 acres, or about 39 percent, are of forest land.

Of the surviving old growth there exists only 70,200 acres or 2.7 percent that is uncut and 212,200 acres, 8.1 percent, that is partly cut. The area of second growth of sawlog size (i. e. trees 13 inches d.b.h. or 9 inches in pine and containing at least one 12 foot usable log ten inches or more in diameter at the small end in hardwood and six inches or more in pine), is fairly equally divided between that which is cut and that which is only partly cut, 530,100 acres (20.3 percent) and 553,700 acres (21,27 percent) respectively. The remaining 47.7 percent representing 1,247,000 acres comprises second growth timber under sawlog size, reproduction, and clear cut.

The cordwood volume of trees under sawlog size (5.0-12.9 inches d.b.h. in hardwood and cypress, and 5.0-8.9 in pine) includes the wood and bark of the main stem to a usable top, the minimum allowable top being never less than four inches and seldom more than eight. The cordwood volume is also net, that is, the volume of cull material that normally would be left in the woods as waste has not been included.

The total net board-foot volume is three billion board feet. Of this total, approximately 21 percent is in old growth uncut stands; 20 percent is in the old growth partly cut; 32 percent in the second growth sawlog size uncut; 22 percent in second growth sawlog size partly cut stands, and five percent on the remaining second growth and clear cut areas. Considering the total board foot volume from another point of view, 41 percent (or 1.2 billion board feet) is on commercial areas; approximately half of this is high grade material suitable for industrial lumber, veneers, and cooperage. On noncommercial forest areas approximately 12 percent of the total board foot volume is high grade material.

In addition to the sawtimber volume, and the volume in sound trees under sawlog size, there is about 11.7 million standard (4x4x8 feet) cords of sound wood, including bark, which is classified as follows:

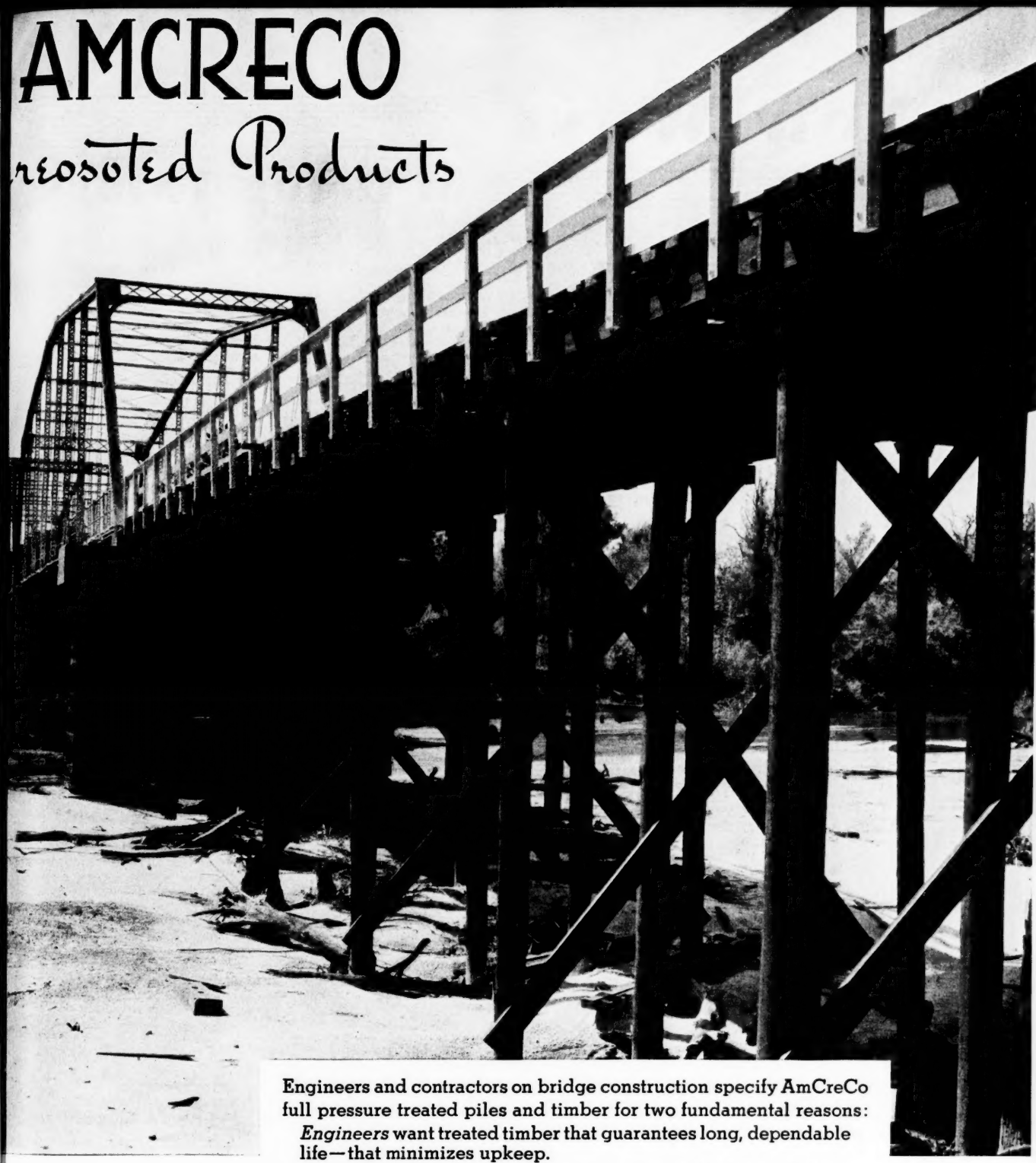
	Cords
Tops and limbs of good trees of sawlog size	6,001,500
Sound wood from stems, tops, and limbs of cull trees	5,659,400
	11,660,900

Comparison of Southern Pine production, shipments and orders, 1938 & 1937

Month	Average per Unit per Month — Production			Shipments			Orders		
	1938 M.Ft.	1937 M.Ft.	% Change	1938 M.Ft.	1937 M.Ft.	% Change	1938 M.Ft.	1937 M.Ft.	% Change
January	257	290	—11	274	335	—18	304	347	—12
February	268	321	—17	275	366	—25	270	318	—15
March	278	323	—14	285	308	— 7	260	284	— 8
April (thru 23rd)	259	343	—24	225	306	—26	224	286	—22
Average 16 Weeks	266	318	—16	267	329	—19	266	310	—14

AMCRECO

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Engineers and contractors on bridge construction specify AmCreCo full pressure treated piles and timber for two fundamental reasons:

Engineers want treated timber that guarantees long, dependable life—that minimizes upkeep.

Contractors demand service—correct materials when and where required.

AmCreCo creosoted products fulfill both requirements.

Wherever treated piles, ties, or lumber are considered in construction work, the greatest return on investment may be realized by utilizing AmCreCo materials. We shall gladly consult with you on your requirements. No obligation.

AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

AMCRECO LOWRY PROCESS CREOSOTED WOOD

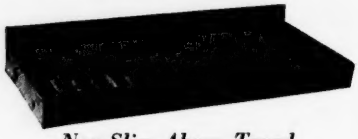
GEORGIA CREOSOTING COMPANY INCORPORATED

ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.

New Ways of Doing Things

Non-Skid Flooring and Stair Treads

The American Brake Shoe and Foundry Company, New York, N. Y., has begun the manufacture of an improved type of non-slip safety metal which is highly resistant to rust and acid corrosion and unaffected in its non-slip properties by water, oil or other slippery liquid substances. It is marketed under the trade name of Non-Slip ABSCO Metal. By a special process of casting, electric furnace abrasive grains are applied to cast iron, bronze, aluminum or nickel silver, and are uniformly bonded into the metal but protruding sufficiently to give a "bite" to it and eliminate the possibility of slipping. ABSCO metal is extensively used for stair treads, ramps, industrial floors, platforms, elevator door sills, swing type door thresholds, trench covers, etc.



Non-Slip Absco Tread

Small Diesel Industrial Engine

Offering an industrial engine for the smaller power user and, incidentally, bringing the number of industrial engines in its present production to nine, Caterpillar Tractor Company, Peoria, Ill., announces the Diesel D3400 engine, a 33-horsepower model and the smallest of the current "Caterpillar" line of industrial Diesels. It is well-adapted to industrial uses within its horsepower range, and for the production of steady, dependable electrical power, in combination with a 15 KW generator. Simple in design, the D3400 engine contains only three operating adjustments—valves, water pump, and fan. As a power unit, it features twin radiators developed by "Caterpillar" engineers—one for cooling the water, and the other for cooling the lubricating oil.

Push Button Speed Controller

In order to simplify floor-operated hoists and cranes, the Harnischfeger Corporation, Milwaukee, Wis., developed the P&H Push Button Master Variable Speed Controller which has five control steps. The element is so designed that it may be grouped into a neat, sturdy push-button case with groupings of elements depending upon the number of motions controlled. By this is meant that it is possible to have a single speed hoist together with a variable speed trolley or bridge in one push-button case. The size of the controller is one of its most distinctive features, its compactness of design being partially accomplished through the use of special materials.

Bruning Model 4 Printer

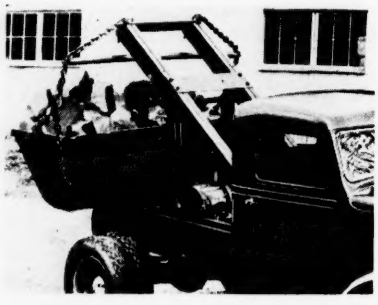
Important mechanical and electrical improvements are incorporated in the new Bruning 4 Printer for blue prints or black and white prints, announced by Charles Bruning Company, Inc., Chicago. This new machine is of the continuous type, the tracings and paper being carried on a heavy, endless canvas band past a curved contact glass, inside of which are mounted two new style, long life mercury vapor tubes, providing illumination for exposing the print. The machine is designed for prints up to and including 42 inches in width, and any length. Its overall size 20 inches deep, 19 inches high, and 61 inches long, wired for 110 vots A. C. or D. C.

Industrial Finish

An industrial finish said to attain the production speed of lacquers and to possess qualities of permanence and durability common to synthetic resin finishes, is announced by Ault & Wiborg Corporation, New York, N. Y. Known as Pulymerin, the new product is the result of a distinctive formulation. Its action is due to the principle of polymerization, a chemical reaction whereby molecules combine under suitable conditions to form molecules of more complex and stable structure. The finish is suitable for washing machines, office equipment, metal furniture, toys, stoves, hospital equipment, plant machinery, electrical appliances, and other metal products.

Brooks Load Lugger on Market

Speed and low cost operation are featured as advantages of the new Brooks Load Lugger, which has been developed after many months of experimental work and rigid testing by the Brooks Equipment and Manufacturing Company of Knoxville, Tenn., and has now been put in production by the company. The new unit is adapted for service in rock quarries, transferring stone from quarry to crusher, and for hauling concrete aggregates, brick and tile, while it also offers low cost service to fertilizer plants, gypsum and other mines, for excavation and other uses. The company declares that one truck alone can service from five to ten bodies, depending upon materials to be loaded and the distance hauled.



Link-Belt Enlarges Atlanta Plant

Announcing the recent expansion of the Atlanta (Georgia) plant of the Link-Belt Company, Chicago, Ill., Harold L. Hoefman, general manager at Atlanta, states that the expansion was designed to provide for a larger engineering department, more shipping space, and additional area for stocks of elevating, conveying and power transmission machinery. The latest addition to the plant, which is located at 1116 Murphy Avenue, S. W., consists in the main of an extension 20 feet wide by 288 feet, to the north side of the building, as shown in the foreground of an accompanying illustration. Construction is of structural steel framing with steel sash and corrugated metal covering.



Link-Belt Plant at Atlanta, Ga.

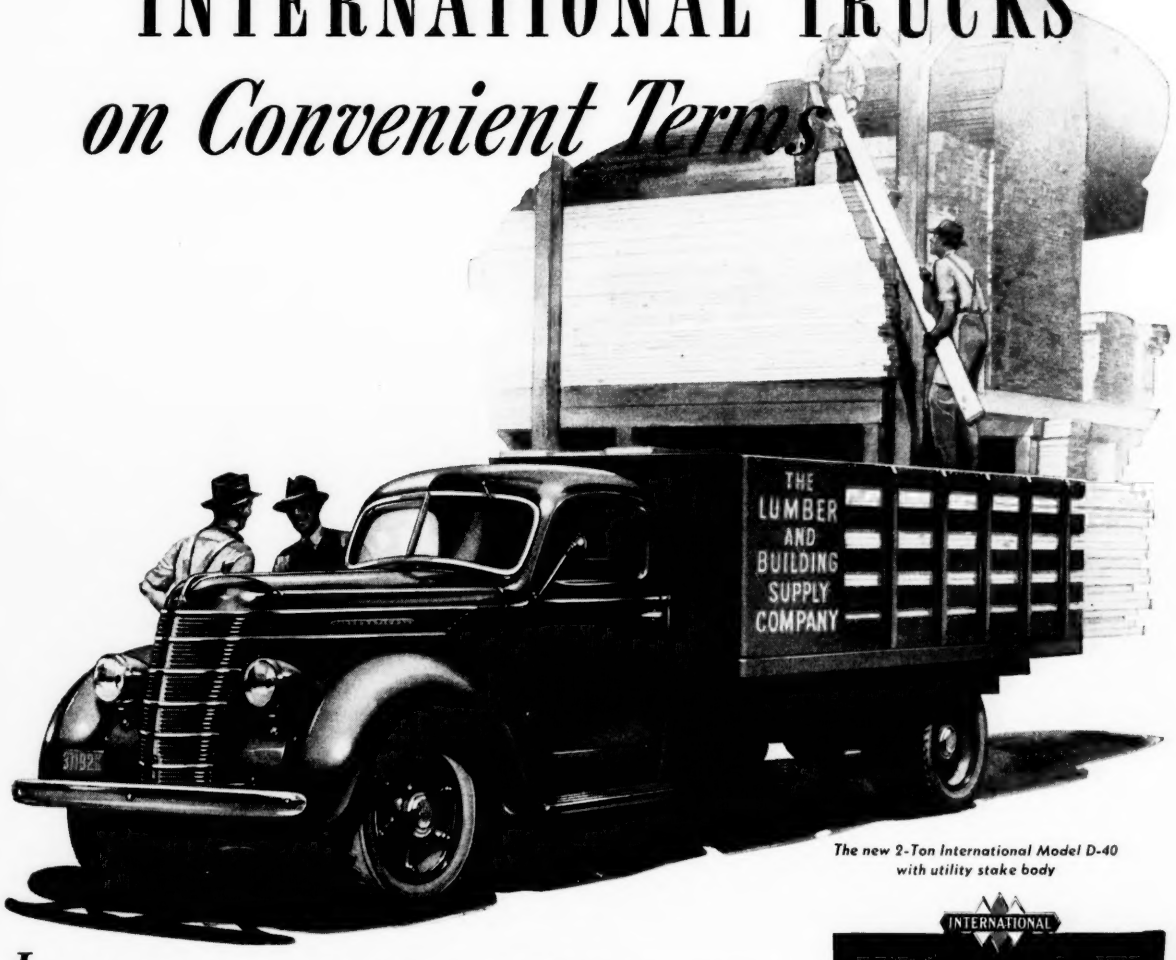
Improved Continuous Filing Band

An improved file band has been developed by Continental Machine Specialties, Inc., Minneapolis, Minn., manufacturers of the DOALL combination sawing and filing machine. The new file is made up of short file segments mounted on a flexible steel band with the ends of the segments shaped to interlock with each other in such a way that the cutting surface flows past the work with entire elimination of jog between the segments, thus accomplishing a new smoothness of flow of cutting with a locking miter principle, on the order of a helical gear tooth construction. The effect created is a steady flow of cutting edge.

Arc Welding Electrode

A new mild steel arc welding electrode, designed particularly for use with small alternating current transformer type arc welders, is announced by The Lincoln Electric Company, Cleveland, Ohio. Welding is said to be simplified with this type of equipment and weld metal of high quality provided. The new electrode is known as Transweld" and is the result of research on the part of Lincoln engineers to develop a rod to meet special requirements of small A. C. transformer welders. It is made in three sizes: 3/32, 1/8 and 5/32-inch, the smallest size coming in 12-inch lengths and the other two in 14-inch lengths.

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The new 2-Ton International Model D-40 with utility stake body

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In the past 30 years tens of thousands of men have been helped to ownership of International Trucks by International Harvester's extension of credit.

Pay CASH on delivery for your trucks when you can, and save *all* financing charges, but when cash must be conserved see what International's practical time-payment plan can offer you. Let International Trucks earn their way as you pay.



One of the International Pick-up Trucks. These light-duty pick-up trucks come in 3 sizes: the ½-ton Model D-2 in two wheelbase lengths, 113 and 125 inches; and the ¾- to 1-ton Model D-15, wheelbase 130 inches.

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INTERNATIONAL TRUCKS

Ground Water Resources for Industry

BY

R. R. Schweitzer

President,
Layne-Atlantic Co.

THE South's ground water resources, both for industrial and domestic purposes, have not been given the important place they merit. Water resources are usually considered by most people, including those who are interested in locating industrial plants, as the nearest stream, river or lake from which visible water supplies can be pumped. When there is no surface supply to be seen, what may be a promising site, often is not even considered by the prospective builder of an industrial plant.

Ground water plays an important part in both industrial and domestic life. It will be surprising to many to know that, with exception of a few large irrigation and power projects, there are more water supplies taken from ground water sources —that is wells, than are obtained from surface streams. Ground water seldom is seriously thought of as to availability, permanence, or cost, although adequate investigation by specialists in this field might lead to large savings in the first cost, or in operations.

Industry could not exist without an adequate water supply, yet it is not uncommon to hear of a plant being located at a cost of from two to ten million dollars with but .5 to two per cent of the expenditure allotted to the water supply. This represents an extremely dangerous procedure.

A pulp mill, for example, needs many million gallons of water daily. This type of plant usually requires more water, in fact, than the city in which it locates. Cities like Jacksonville, Fla., and Savannah, Ga., each use approximately 15 million gallons of water a day. Single pulp mills in their proximity require as high as 20 to 30 million gallons.

Ground water constitutes one of the most important resources and valuable assets of the South.

The Brunswick Basin

One of the most prolific supplies in the area is found in the limestone Brunswick basin underlying nearly all of the southern half of Georgia and the northeastern section of Florida down through Gainesville and Palatka.

This basin is formed in the shape of an immense sugar scoop with the handle end toward the west side of Georgia and the center of the bowl end located on the Continental shelf in the Atlantic Ocean about 75 miles east of Brunswick, Ga. The rim of the bowl varies from a few miles in width to more than a hundred miles. This rim forms what might be called a rolled edge and acts as the intake area where a large percentage of rainfall sinks into the earth and naturally emerges as fresh water far at sea.

The limestone forming the bottom and water conveying portion of the basin lies under confining geological strata; so that the water is held down until it seeks its natural outlet where the Gulf stream flows along the rim of the North American continent.

When wells are drilled along the coast from Savannah to Jacksonville, a high intake head, together with friction losses and flow interference through the formation, causes the water to flow under artesian pressure. The capacity is increased with no danger to the quality, when the water is lowered by pumping. Wells have an output up to 10 million gallons per day when so pumped.

Abundant waters may be developed further west in Georgia and Florida, where the ridge is far above sea level, by pumping when the underground rocks are penetrated and wells of proper construction and large diameter are installed. It is not unusual to extract as high as two million gallons daily from each well with a reasonable drawdown. The ground water supply in the entire area can support, within reason, all industries the other resources can sustain.

The Mississippi Embayment

Almost any quantity of water may be obtained from the Mississippi embayment extending from the western side of Alabama well over into Texas and as far north as Minneapolis. Water supplies in this area are developed from sands and gravels and rocks in various stratification placement. The sandstones that outcrop in Minnesota and Wisconsin are deep enough in Texas, Louisiana and Oklahoma to form the oil bearing sands as they dip under and are confined by limestone cappings. Above these limestone cappings are enormous quantities and layers of various grades and types of sands and gravel, from which are taken such water supplies as those of the Champion Fibre Co., at Houston, Tex., of the paper mills at Monroe, Bastrop, and Hodge, La., as well as of the plant now under construction at Springhill, La. and at least 75 per cent of all the industries and smaller cities and towns in the entire area.

Lack of familiarity with ground water supplies and the fact that some of the irrigation fields in the west have greatly overdrawn their sources of supply, have made some engineers skeptical about the permanency of a supply of water brought from beneath the earth in the volume required by pulp mills. A careful study will reveal that the irrigation supplies are so concentrated that they far exceed the possible draft created by pulp mills, industries and cities.

That the pressure or static levels are lowered in areas where the new pulp mills have been established does not indicate depletion of the supply, even though it is necessary to pump the water from greater depths. The principal item to consider is whether or not the water is economically available at the heads against which it will have to be pumped. Ground water is an economical source because very little or no treatment is required for turbidity. The temperature of such water remains the same throughout the year, thus stabilizing manufacturing practices.

Mechanical construction of wells throughout the South varies

Wells in the vicinity of Savannah and Brunswick, Ga., and Fernandina and Jacksonville, Fla., are all endangered by salt water horizons lying between the surface and the principal aquifer. Consequently a particular type of construction has to be used for security against such contamination. This is usually done by coring and drilling very large holes up to 29 inches in diameter and setting as large as 26-inch casings to depths in excess of 500 feet. A neat cement grout is pumped between the casing and the rock wall from the bottom to the surface of the ground. Drilling is then resumed from 500 to 750 feet below the bottom of the casing to the water bearing horizons which produce the desirable water supply.

At Port St. Joe, and further west in both Florida and Georgia, construction must be a combination of the gravel wall and rock well type, if the maximum supply is to be produced. The gravel and sand formations, particularly the latter, must be reamed to very large diameters. Screens

(*Continued on page 56*)



This Big Paper Mill



Here is a specific case where the water supply system had to be highly efficient and dependable. With such requirements before them, the Designing Engineers of the Union Bag & Paper Corporation sought the assistance and knowledge of the Layne engineers, who suggested the design and entire ground water supply layout for their Savannah, Georgia, Plant. From beginning to completion all wells were drilled and equipped and all studies made as to the adequateness of the available supply by Layne men. All wells are specially lined with cement to meet the rigid demands of the City authorities, and are all equipped with Layne High Duty pumps. No plant in the world can boast of a finer ground water system nor one furnishing water more economically.

If your plans call for a new water system, or the modernization or enlarging of an old one, our engineers can provide much helpful advice and information. No obligation. Write for illustrated literature. LAYNE & BOWLER, INC., Dept. XI, Memphis, Tenn.

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FOR MUNICIPALITIES • INDUSTRIES • RAILROADS • MINES AND IRRIGATION

April Contracts Highest for Eight Months

(*Continued from page* 33)

Industrial contracts were somewhat less than thirty-nine per cent below those of the previous month. Three large industrial projects led the list of such enterprises proposed or actually launched during April. The largest of all the awards was the $1,099,500 Arsenal Hill station enlargement of the Southwestern Gas and Electric Co. at Shreveport, La. The most prominent new plant established was the $1,000,000 factory to be constructed at Jarratt, Va., by the Johns-Manville Corp. for producing insulating board from wood pulp. A $3,000,000 plant was announced by the United States Tobacco Co., of Richmond, Va., as well as $1,000,000 addition to the North Carolina plant of the Ethyl-Glow Chemical Co.

The Breaux Bridge Sugar Cooperative, Inc., awarded contracts for a $7,000,000 cooperative sugar factory to be built at Breaux Bridge, La. This plant will grind in the neighborhood of 90,000 tons of cane each season. Its daily capacity will be 1,250 tons. Another large sugar refinery is proposed at the Himalaya plantation, about seven miles south of Napoleonville, La. The work is estimated to entail an expenditure of from $500,000 to $600,000 and involves steel mill buildings, sugar house machine, generating units and new boilers.

Two quasi-governmental projects occupied prominent places in industrial construction. These were the tire plant building at Natchez, Miss., and a woodworking mill near Elkins, W. Va. This Mississippi structure is to be erected by the City of Natchez for the Armstrong Tire & Rubber Co. Tires will be made for Sears-Roebuck distribution. It is to cost approximately $270,000 and will house equipment to be installed at many times that figure. The West Virginia project will cost $250,000. Sponsored by the Tygart Valley Association, which has organized the Kenwood Corp. to erect and equip the project, the plant will employ the labor of the Tygart Valley experiment of the Farm Security Administration.

Large dam projects proceeded during the month, as awards were made and bids were asked. The Lower Colorado River Authority made additional contracts for the $12,000,000 Marshall Ford project, now under construction near Austin, Texas, as the United States Engineer at Vicksburg, Miss., let contracts at $864,470 for constructing the outlet structures for Sardis dam, the key unit of a $14,000,000 proposition for flood control in Mississippi. The Grand River Dam Authority, an Oklahoma organization, received a $149,700 bid for constructing a railroad, highway and bridge, preliminary to opening the proposals in May for the main structure of a $20,000,000 project for reclamation and conservation in northeastern Oklahoma.

Another definite step was taken toward constructing the Possum Kingdom Dam in Palo Pinto County, Texas, as directors of the Brazos River Conservation and Reclamation District contracted for the $3,287,303 project, which is part of an ambitious plan for harnessing the flood waters of the Brazos and tributary streams. Wappapello dam, a $22,500,000 project in the Wayne County section of southeast Missouri, is scheduled to get under construction this summer.

Representative Projects in South Last Month

Proposed Construction

Ala., Birmingham—F. W. Woolworth Co.
Store $500,000

Ala., Decatur—City, R. N. Harris, Mayor
Electric distribution system; T. M. Francis, Birmingham, Engrs. 300,000

Ark., Booneville—State Tuberculosis Board
(Booneville Tuberculosis Sanitorium—Haralson & Mott, Fort Smith), Erhart & Eichenbaum, Little Rock, Archts. 1,700,000

Ark., Little Rock—City Board of Public Affairs
Auditorium; Eugene John Stern, and Wittenberg & Delony, Archts. 760,000

D. C., Washington—U. S. Engineer Office
Reconstructing and Improving waterfront area..... 2,800,000

Fla., Miami—Home Owners Finance and Service Co.
Dwellings 200,000

Fla., St. Augustine—Wendt Aircraft Corporation
Plant 150,000

Ga., Athens—U. S. Housing Authority
City slum clearance; J. W. Barnett & Co., Atlanta, Engr. and Archt. 270,000

Ga., Atlanta—City
Housing projects; Tucker & Howell, Archts. 8,000,000

Ky., Frankfort—Department of Highways
Office building 500,000

La., Napoleonville—Supreme Sugar Refinery
Refinery; Leo. S. Weil & Walter B. Moses, Inc., New Orleans, Conslt. Engrs. 600,000

Md., Baltimore—United States Housing Authority
Slum clearance, low cost housing 9,600,000

Md., Jessups—State Board of Welfare, Baltimore
Penal institution for women; Henry G. Perring, Baltimore, Archt. 250,000

Miss., Natchez—City, William J. Byrne, Mayor
Tire factory; Roberts & Schaefer, Chicago, Ill., Engrs. ... 275,000

Mo., Columbia—State Cancer Commission
Hospital; Jamieson & Spearl, St. Louis, Archts. 500,000

Mo., Wappapelo—U. S. Engineer Office, Memphis
Flood Control project 22,500,000

N. C., Chapel Hill—University of North Carolina
Public Health and Medical Building; Wiley & Wilson, Lynchburg, Engrs., Atwood & Weeks, Inc., Archts. and Engrs. 385,000

N. C., High Point—Emerywood Housing Corp
Apartment; H. A. Underwood Co., Raleigh, Archts. 350,000

Okla., Oklahoma City—C. B. Warr Realty Co.
Dwellings 2,500,000

S. C., Greenville—Emory C. Green, and Ray H. Taylor
Apartment; Charles C. Hartman, Greensboro, N. C., Archt. 300,000

Tenn., Memphis—Memphis Light & Water Commission
Electric Equipment; D. Kenneth Markwell, Chief Project Engr. 250,000

Tenn., Murfreesboro—Veterans Administration
Veterans Facility 1,650,000

Tex., Austin—City of Austin Housing Committee
Slum Clearance project; Giesecke & Harris, Archts. 720,000

Tex., Dallas—City
Sewers; Airport 1,300,000

Tex., Houston—U. S. Housing Authority
Slum Clearance, lost cost housing 2,250,000

Tex., San Antonio—Sears, Roebuck & Co.
Building addition 450,000

Va., Richmond—State of Virginia
Library 450,000

Va., Roanoke—Snead-Payne Real Estate Co.,
Apartment $500,000

W. Va., Prenter—Red Parrot Coal Co.
Improvements 300,000

Contracts Awarded

Ark., Paragould—City
Electric light plant; R. H. Bouligay, Inc., Charlotte, N. C., (low bidder) $133,000

D. C., Washington—Waverly Taylor, Inc.
Dwellings 1,500,000

Fla., Key Largo—Carl G. Fisher
Fishing Colony, Yacht Club; W. Grover Hodge, Miami, Contr. 100,000

Ky., Louisville—City
Sewer extensions; W. L. Hailey & Co., Nashville, Tenn., Contr. 157,000

La., Breaux Bridge—Breaux Bridge Sugar Co-Operative Inc.
Sugar mill; Larrell Birmingham Co., Ansonia, Conn., Contrs. 700,000

La., Natchitoches—Natchitoches Parish School Board
High and trade School; R. P. Farnsworth & Co., New Orleans, Contr. 384,000

La., Shreveport—Southwestern Gas & Electric Co.
Power plant extension; L. E. Meyers Co., Chicago, Ill., Contr. 1,099,000

Maryland—Canal improvements, (Chesapeake - Delaware); Tidewater Construction Co., Norfolk, Contr. 194,000

Md., Baltimore—Oaklee Village, Inc.
Apartments; Oaklee Construction Co., Contr. 800,000

Miss., Sardis—U. S. Engineer Office
Sardis Dam, outlet structures; E. J. Albrecht Co., Chicago, Ill., Contr. 864,000

Mo., Richmond Heights—Manhassett Village Corp.
Apartment house development; H. B. Deal & Co., Inc., St. Louis, Contr. 2,000,000

Mo., Mount Vernon—Empire District Electric Co., and Ozard Electrical Cooperative—Electric lines; Williams Brothers, Tulsa, Okla., Contr. 106,000

N. C., Morganton—North Carolina State School for Deaf
Alteration; V. P. Loftis, Charlotte, (low bidder) 142,000

Okla., Pensacola—Grand River Dam Authority of Oklahoma
Railroad; Highway and Bridge Construction; Leo Sanders, Oklahoma City, Contr. 149,000

S. C., Greenwood—Greenwood County Finance Board
Dam, power house and spillway; E. W. Grannis, Fayetteville, N. C., and Lee Construction Co., Charlotte, N. C., Contrs. 509,000

Tenn., Memphis—Memphis Light and Water Commission
Transmission and distribution line; Miller Electric Co., Jacksonville, Fla., Contr. 233,000

Texas—Brazos River Conservation and Reclamation District
Possum Kingdom Dam; A. L. Johnson Construction Co., Minneapolis, Minn., and C. F. Lytle Co., Sioux City, Iowa, Contrs. 3,287,000

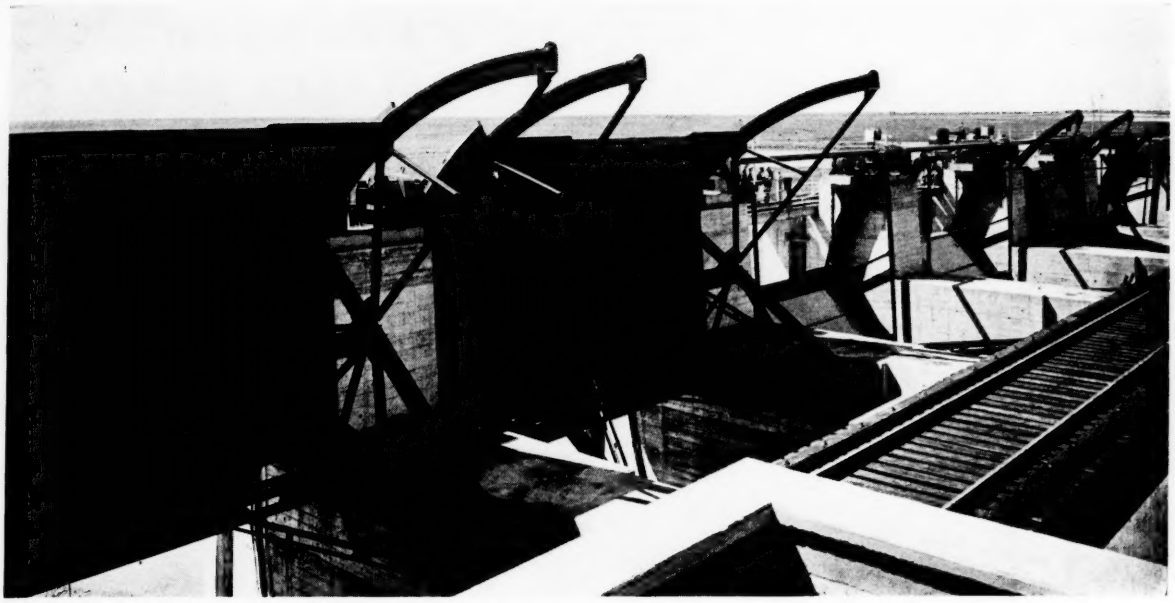
Tex., Fort Worth—City-Tarrant County
Hospital; Gurley Construction Co., Contr..... 2,066,000

Tex., Houston—Montgomery, Ward & Co.
Remodel building; R. F. Ball Construction Co., Fort Worth, Contr. 200,000

Tex., Midland—First National Bank
Office building; R. F. Ball Construction Co., Fort Worth, Contr. 250,000

Va., Norfolk—Apartment house; A. Lloyd Goode, Charlotte, Contr. 800,000

Va., Jarrat—Johns-Manville Corporation
Factory; Stone & Webster Engineering Corp., New York, Contrs. 1,000,000



6 Steel Tainter Gates 34' wide x 26' high, Mountain Creek Dam, Dallas Power & Light Co., near Dallas, Texas.

VIRGINIA BRIDGE

Steel Structures

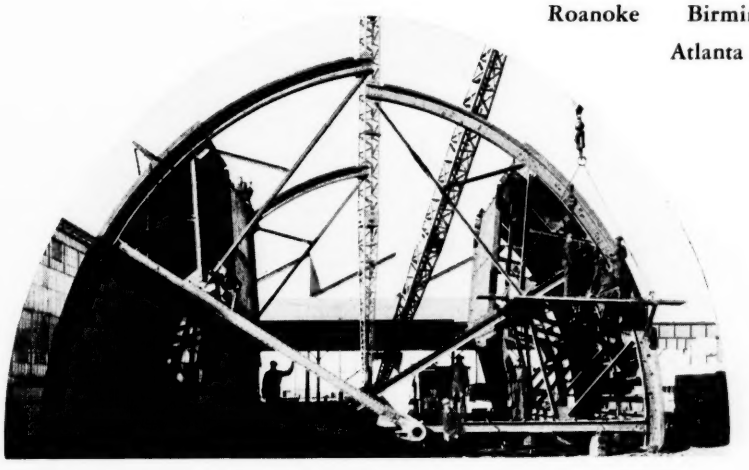
The Gap and Seal

A widely used type of gate for control of the water level in a dam is the Tainter Gate. It requires the known dependable strength of Steel plus precise accurate design and workmanship.

VIRGINIA BRIDGE has built many such gates throughout the Country as witness those recently furnished for the Mountain Creek Dam in Texas.

VIRGINIA BRIDGE COMPANY

Roanoke Birmingham Memphis
Atlanta New York
Dallas



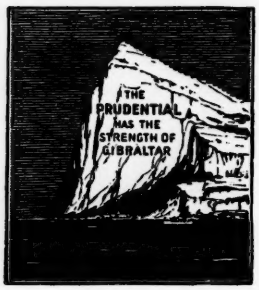
Assembling and Match - Marking Gates in our Memphis Plant. Gates must, of necessity, be true as to size and curve to insure proper fit and working.

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Very popular with business executives

The several low-premium policies issued by our Company in units of $5,000 and upwards

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HOME OFFICE: NEWARK, N. J.

» » » *Finance* « « «
AND KINDRED SUBJECTS

A Hard Case To Prove

The outcome of the spending program advocated by the President, the expansion of credit facilities through gold desterilization the lowering of reserve requirements thereby increasing banks' funds by 750 million dollars is being watched closely to see if bank loans will increase instead of declining as has been the case of late. Banks have been eager to lend to borrowers asking for credit but the request for loans have been lacking. Those who argue that pump priming will start the ball of prosperity rolling have yet to prove their case. Conservative business on the other hand wonders how the bill will be met in view of the present let down after the vast expenditures that have been made in recent years.

Utilities As Taxpayers

Giving an idea of what important factors private utilities are in the income of states in which they are located, the annual report of the Alabama Power Company shows that as Alabama's largest tax payer, its daily tax bill has been $8,446. Total taxes paid during 1937 amounted to more than three million dollars, of which one million went into the state's school funds.

Taxes for the year were the highest in the company's history. Notwithstanding this, rates were reduced to the lowest point so far reached. Residential customers of the company used an average of 62 per cent more electricity than residential customers throughout the country but they paid 32 per cent less than the national average rate.

The report points out that the competitive operations of the TVA has so depressed prices of the company's securities that it has been unable to refinance at lower rates of interest and is thus prevented from realizing savings in its fixed charges, which could be largely passed on to customers in the form of still lower rates.

Voluntary Wage Cuts

An encouraging sign in the present situation is the evidence labor has given in several instances of a willingness to recognize the difficulties under which employers are trying to operate by agreeing to reductions in wages to keep plants open. The false economy of trying to force high prices when people won't buy is constantly proving its error.

On the other hand, the lengths to which misguided workers can go has been shown in the folly of several movements which have closed plants because a minority had not paid their dues to the union. Such movements fortunately are likely to be of short duration. In the textile industry several instances have been reported of cotton mill employees voluntarily taking wage cuts.

Asking Taxes on New Issues

Most of the business news comes from Washington these days. Following the recommendations of the President for spending to prime the pump came another message recommending taxation on future issues of federal, state and municipal bonds. Congress will probably take time to ponder the proposal and doubt is expressed by commentators that anything will be done about it immediately.

It is also questioned if a law which will embody the President's ideas can be passed by Congress. This would seem to point to a constitutional amendment. While the proposition has much to recommend it, investors will wonder if the present plan

(*Continued on page* 50)

TANKS

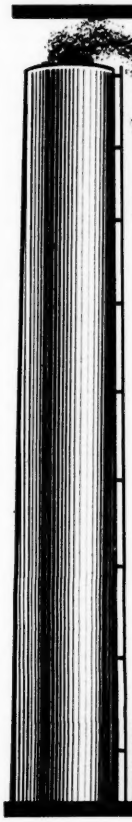
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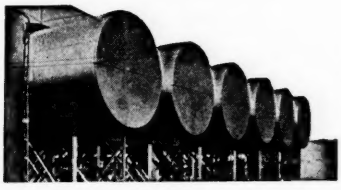
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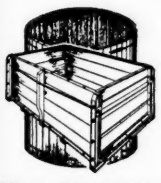
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BALTIMORE, MARYLAND
Member Federal Reserve System
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"Finance and Kindred Subjects"

Asking Taxes on New Issues

(*Continued from page* 48)

is successful if the tax gatherers can be kept away from present outstanding government obligations.

The right of the federal government to tax issues of the various states or municipalities rests with the consent of the states. A constitutional amendment would make it effective or an agreement of the states with the federal government that would give the privilege to the state to tax federal issues.

The situation presents difficulties in various directions but in view of the necessity of providing larger revenues it is probable that something along the line proposed will be worked out. A prolonged howl will no doubt be heard about the suggestion to tax federal office holders. Some skeptics wonder if Congress will adopt this for its own membership.

Rail Rates

The Interstate Commerce Commission has dropped for the time being its investigation of railroad rates between the South and official territory. The case brought to the Commission's attention by nine Southern state governors regarding the level of both class and commodity rates within the South and between the South and the North will be heard at Buffalo on July 12th.

Directors of the Association of American Railroads have prepared a recommendation for reducing the wages of a million railroad workers as a necessary step under present conditions. It is possible that an additional plea will be made to the Interstate Commerce Commission for further emergency increases in freight rates. Railroad labor executives are quoted as saying that wage cuts are out of the question and in the meantime it is probable that a fact-finding inquiry will be instituted. Some of labor's leaders have already expressed the thought that it is in order to get at the facts.

In Washington various measures of aid for the carriers are being considered. These include loans from the R. F. C. with the security of equipment notes applying to new equipment the money would buy. Senator Wheeler is reported nearly ready to introduce a bill creating a railroad re-organization court. Another proposal is to supply needed capital and give it a preferred place over capital indebtedness now outstanding. Whatever may come about it is a healthy sign that the necessity for cooperating with private management to put the railroad business on its feet is becoming more clearly recognized every day.

Anti Trust Suits Likely

In a speech delivered in New York, Thurman Arnold, Assistant Attorney-General of the United States, who has been placed in charge of anti-trust law enforcement, promised vigor in criminal prosecution of illegal trade practices. He described the public's attitude as "peculiar mythology" in the failure to perceive that the prices obtained by a monopolistic group controlling the market are essentially the same as taxes, with the difference however that they result wholly in private benefits instead of public good. He did not agree with the idea of letting up prosecuting such offenders during a depression period because "such periods give the larger and stronger firms more incentive and easier opportunities for extending their control over a narrow market." The policy of the Department of Justice, according to Mr. Arnold, should be that the results of the practices employed rather than the intent of those responsible for them should determine the prosecution.



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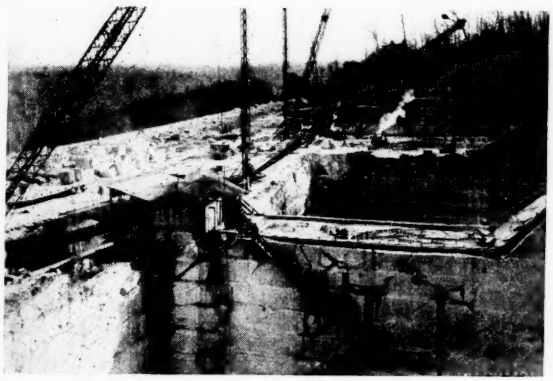
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- spandrels, window sills, and other exterior trim for important new buildings and for the renovation of old structures;
- stair treads, toilet partitions, wainscot, etc., for utilitarian and decorative purposes in the interiors of an equally imposing group of commercial, educational and institutional buildings.

The only known deposit of the superior grade of soapstone, identified as "Alberene Stone," is in a vein about five miles long, of unknown depth, which starts in Albemarle County and extends into Nelson County. Alberene Stone Corporation of Virginia, 419 Fourth Avenue, New York.

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With U-Bar Line Posts That

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ANCHOR'S U-Bar line posts are 50% stronger, size for size and weight for weight, than the commonly used pipe, T-Bar and L-Bar posts. Made of high carbon steel (.45 to .75 carbon) and heavily galvanized by the hot-dip spelter method, U-Bar line posts are another *extra* advantage for Anchor Fence owners.

As permanent as the U-Bar line posts is Anchor's exclusive method of keeping them fast in the ground with deep-driven "anchors." In hard ground or soft . . . sandy or rocky . . . frost and thaws, stress and strain won't weaken them. That's why an Anchor Fence won't come loose, won't get out of line.

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INDUSTRIAL NEWS

American Car and Foundry Appointment

Charles J. Hardy, president of American Car and Foundry Company, New York, N. Y., announces the appointment of L. W. Martin as District Sales Manager with headquarters at St. Louis, Mo. This appointment places Mr. Martin in charge of all sales activities under the jurisdiction of the St. Louis office of the company. He became associated with American Car and Foundry Company in 1902, following his graduation from the University of Kentucky.

Gulf, Mobile and Northern Railroad Report

For the calendar year ended December 31, 1937, net income of the Gulf, Mobile and Northern Railroad Company amounted to $345,118, according to the company's Twenty-First Annual Report. This compares with a net income for 1936 of $706,552. Total railway operating revenues for 1937 amounted to $7,527,128, compared with $7,292,909 in 1936, while total railway operating expenses in 1937 were $5,107,753, compared with $4,498,593 in 1936.

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● Here, in America's largest crane-building shops, are born the developments which mean lower and still lower costs for handling heavy materials in your plant.

Through the building of more than 10,000 electric traveling cranes, this group of specialists offers you the experience and ability to solve your problems of material-moving in the most efficient and economical manner. P&H electric cranes are built in all capacities from 5 to 300 tons. Complete information on request. The Harnischfeger Corporation, 4427 W. National Avenue, Milwaukee, Wisconsin.

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Jones and Laughlin Appointments

Lewis M. Parsons, Vice President and General Manager of Sales of Jones & Laughlin Steel Corporation, Pittsburgh, Pa., announces the opening of a new district sales office in Baltimore in charge of V. A. Jevon as district sales manager, and H. R. Dorney as assistant district sales manager. Mr. Parsons also announces the appointment of three assistant general managers of sales—R. T. Rowles, W. H. Wiewel, and H. J. Watt—the two former having general supervision over products sales departments and the latter over Eastern district sales offices, including New York, Boston, Philadelphia, Atlanta, and the new district sales office in Baltimore. In addition to these, the corporation also announces other appointments and promotions.

Completes 60 Years With Company

President L. A. Bassett of the Hendrick Manufacturing Company, Carbondale, Pa., makers of various types of perforated metal screens and grilles, this year completes a continuous record of 60 years of active service with the company. He began as an office boy in 1878, advancing regularly until 1909, when he was elected president. He is also president of the Cloverleaf Manufacturing Company, founded in the early 1900s by Mr. Hendricks.

Textile Stacking Boxes

Offering a good, practical container for yarns, bobbins and goods in the finished or unfinished state, G. B. Lewis Company, Watertown, Wis., is producing a lightweight, inexpensive box of strong, resilient construction which may be stacked ceiling high to utilize space and keep aisles clear for traffic.

National Power Show

The Thirteenth National Exposition of Power and Mechanical Engineering will be held at Grand Central Palace, New York, from December 5 to 10, 1938. It will be under the personal management of Charles F. Roth. Judging by the advance response from previous exhibitors, this biennial event, according to Mr. Roth, will be as successful as previous expositions.

"Self-Priming" Centrifugal Pumps

Designed for handling 600 to 20,000 gallons of water per hour, a new line of completely automatic "Self-Priming" Centrifugal Pumps has been developed by The Deming Company of Salem, Ohio. A noteworthy feature of the new pumps is rapid and positive priming without the use of tanks, built-in strainers, hand operated controls or other mechanism. The pumps are available in electric motor and belt-driven units, as well as gasoline engine drive. Both stationary and portable units are included in the line.

New Paint Kills Parasitic Spores

The Billings-Chapin Company of Cleveland, Ohio, recently announced a mildew-proof mill white paint, among the first of such products to be developed commercially, which should be of importance to plants operating under conditions of high humidity and high temperatures. The paint is said to contain a special non-yellowing fungicide, blended into it at the time of manufacture, which kills parasitic spores before they can settle on the painted surface. The fungicide content, it is declared, blends smoothly with the oils and oxides without affecting brushing characteristics or the smoothness of the finished film.

United States Steel Corporation Report

Total gross sales and revenues of the United States Steel Corporation and subsidiary companies for the year ended December 31 amounted to $1,395,549,629, according to the Thirty-Sixth annual report. This compares with $1,083,337,435 for the previous year. For the year ended December 31, 1937, there was a balance of $296,777,300, compared with a balance for 1936 of $210,819,946. Net operating income for 1937 amounted to $122,426,321, compared with $62,053,529 for 1936. Income before provisions for Federal income and profits taxes amounted to $124,444,357 for 1937, compared with $61,783,356 for 1936, while net income applicable to capital stocks amounted to $94,944,357 December 31, 1937, compared with $50,583,336 on December 31, 1936. Total dividends paid in 1937 amounted to $67,248,930, compared with $50,439,354 in 1936, while the surplus for 1937 amounted to $27,695,426, compared with $144,002 for 1936. At the close of 1937, there was a balance of earned sur-

(*Continued on page 54*)

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HAND or WET PROCESS

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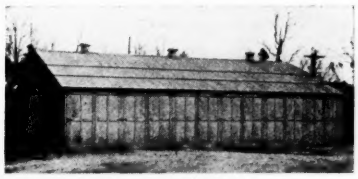
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Washed Sand and Gravel for Concrete Roads and Buildings
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WOLMANIZED LUMBER—
Decay and Termite Proof—Can Be Painted
Docks for Ocean Vessels

American Creosote Works, Inc.
New Orleans, La.

Atlantic Creosoting Co., Inc.
Norfolk, Virginia

Plants at: New Orleans; Winnfield, La.; Louisville, Miss. Savannah, Ga.; Jackson, Tenn., and Norfolk, Va.

INDUSTRIAL NEWS

(*Continued from page 52*)

plus of $280,356,143, compared with $252,660,716 at the close of 1936. Net expenditures of the company on property investment account in 1937 amounted to $123,617,832, including heavy expenditures for manufacturing facilities and other improvements to the properties of the Tennessee Coal, Iron and Railroad Company in the Birmingham district, and to properties of Universal Atlas Cement Company at Leeds, Ala.

TRADE LITERATURE

PLANT CLEANLINESS—
Bulletin—"The Dollars and Sense of Modern Cleaning for Industry," illustrated, with list of prominent companies using Invincible equipment.
Invincible Vacuum Cleaner Manufacturing Company, Dover, Ohio.

INSULATED CABLE—
Bulletin (GEA-2623)—"Varnished-Cambric Insulated Cable," supplying information on available types, their construction and characteristics, and applications; other G-E publications for users of insulated cable are: GEA-1837, "How to Select Insulated Cable," and GEA-2215, "Aerial Cable."
General Electric Company, Schenectady, N. Y.

GALVANIZED ROOFING—
Folder—featuring the new U. S. S. Storm-Seal galvanized roofing.
United States Steel Corporation Subsidiaries, 434 Fifth Avenue, Pittsburgh, Pa.

FRISCO ADVERTISING—
Folder—outlining in white and black a new series of Frisco advertisements, including thirteen one-column by five-inch ads and one two-column by five-inch ad.
St. Louis-San Francisco Railway, St. Louis, Mo.

PORTABLE HYDRAULIC POWER—
Booklet — "Porto-Power, Portable Hydraulic power for Body Rebuilding, Frame and Axle Work, General Shop Jobs," illustrating and describing a modern hydraulic power tool for handling body rebuilding, used car reconditioning, general shop jobs and many frame and axle straightening operations.
Blackhawk Manufacturing Company, Milwaukee, Wis.

CONTINUOUS PRODUCTION—
Booklet—"Equipping Industry for Continuous Production," presenting a pictorial review of the Mathews Conveyer Company line and deals with the application of various types of conveyers in numerous industries.
Mathews Conveyer Company, Ellwood City, Pa.

TWO-STAGE CENTRIFUGAL PUMPS—
Bulletin 7067—presenting complete specifications and operating characteristics of the Cameron Class GT two-stage centrifugal pump, designed to operate at modern motor, turbine and engine speeds.
Ingersoll-Rand Company, Phillipsburg, N. J.

STEELS—
Steel Buyers' Guide—handy pocket-size book giving complete listings and descriptions of the wide range of Certified Steels and allied products carried in stock by Ryerson, with reference tables, weight charts, standard specifications, listings, etc.
Joseph T. Ryerson & Son, Inc., Chicago, Ill.

BOOK REVIEW—
Tennessee Tax Handbook — Compiled and edited by Fred R. Young and Julian Bland, and published by Southern Publishers, Inc., of Kingsport, Tenn.; priced at $7.50 postpaid.
This publication, consisting of 1400 pages illustrated with charts, diagrams, forms, etc., presents a complete and useful compendium. Each tax law is covered in a chapter by itself, accompanied by information on the history of the law, the specific rules and regulations developed to date, and pertinent comment respecting the law and the Supreme Court decisions affecting it. An unusual feature of the manual is the system of indexing employed, with the indexing arranged by laws and each law chapter having a comprehensive index of its own, amplified by an index to contents. Included in the volume are authentic copies of the State Constitution, the Reorganization Act of 1937, a table of Comparative Revenues for 1936-37, and a chart showing the organization of the Department of Finance and Taxation.

BOOK REVIEW—
Advertising and Selling Industrial Goods— This publication of 287 pages is by Vergil D. Reed, Ph. D., Associate Professor of Marketing and Foreign Trade, Boston University; Chief, Retail and Wholesale Trade, Bureau of the Census, U. S. Department of Commerce, and is published by The Ronald Press Company, New York. It is priced at $3.50.
According to Mr. Reed's preface, the volume deals with the "strategy, tactics, and technique involved in the advertising and sales promotion of industrial goods". No attempt has been made to stress the mechanical or production phases of building an advertisement, he says, as these mechanics are essentially the same for all advertising. The book is not only intended to give practical assistance and suggestions to advertising and sales executives in the development of sound plans, but is especially designed to aid many small and medium sized companies dependent upon the most effective use of limited appropriations to attain their marketing objectives.

CONDENSED STATEMENT
SHOWING THE CONDITION OF THE

Fidelity & Guaranty Fire Corp.
Baltimore, Md.

DECEMBER 31, 1937

Total income during the year	$4,480,681.48
Total disbursements during the year	3,848,807.55
Total admitted assets	6,601,177.39
Total liabilities except capital	$4,042,678.13
Capital actually paid up in cash $1,000,000.00	
Surplus over all liabilities 1,558,499.26	
Surplus as to policy holders..	2,558,499.26
Total liabilities	$6,601,177.39
Net premiums in United States December 31, 1937....	$6,466,825.45
Risks written in Maryland during 1937	38,522,560.00
Premiums on Maryland business in 1937	177,526.21
Losses paid in Maryland in 1937	53,831.58
Losses incurred in Maryland in 1937	53,532.58

STATE OF MARYLAND
Office of the
STATE INSURANCE DEPARTMENT
Baltimore, Md., March 1, 1938

I hereby Certify, That the above is a true abstract, taken from the Annual Statement of the FIDELITY AND GUARANTY FIRE CORPORATION, BALTIMORE, MD., for the year ending December 31, 1937, now on file in this Department.

W. S. HANNA,
Insurance Commissioner.

Florida
Beach Property
For Sale

Land & Lots
on Anastasia Island
near St. Augustine

Town property
at Flagler Beach
Flagler County

Investigate the possibilities of Beach property for development in Florida

Model Land Company
Flagler System
St. Augustine, Florida

for Joining and Repairing

CONVEYOR BELTS

FLEXCO HD

BELT FASTENERS **RIP PLATES**

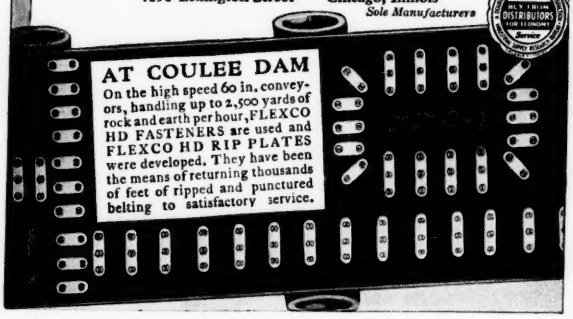


U. S. Pat. 1,982,799

FLEXCO HD BELT FASTENERS make a tight butt joint of great strength and long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Five sizes in steel and alloys.

FLEXCO HD RIP PLATES are used in repairing rips and patching conveyor belts. The added width gives a desirable long grip on the edges of the rip. Consultation on belt joining and repair invited. Sold through jobbers and belting houses the world over.

FLEXIBLE STEEL LACING CO.
4690 Lexington Street Chicago, Illinois
Sole Manufacturers



AT COULEE DAM

On the high speed 60 in. conveyors, handling up to 2,500 yards of rock and earth per hour, FLEXCO HD FASTENERS are used and FLEXCO HD RIP PLATES were developed. They have been the means of returning thousands of feet of ripped and punctured belting to satisfactory service.

FILTERS

Water Filters for Municipalities, Textile Finishing Establishments, Rayon Manufacturing Plants, Swimming Pools, Raw Water Ice Plants, Laundries, etc.

ROBERTS FILTER MANUFACTURING COMPANY
604 Columbia Avenue Darby, Pennsylvania

Water Purification Plants

Any Type—Any Purpose—Any Capacity

Dry Chemical Feed Machines
Swimming Pool Filters

E. W. BACHARACH & CO.
Rialto Bldg. Kansas City, Mo.

Filtration and Pumping Equipment

For Water Works and Swimming Pools
Sales and Installation

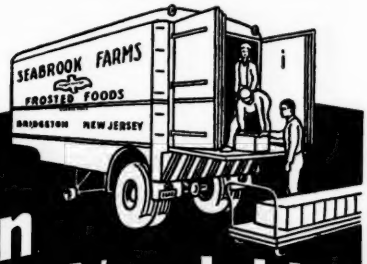
BURFORD, HALL AND SMITH
140 Edgewood Avenue, N. E.,
Atlanta, Georgia

STRUCTURAL STEEL *for* **BUILDINGS and BRIDGES**

Capacity 1000 Tons per Month. 3000 Tons in Stock

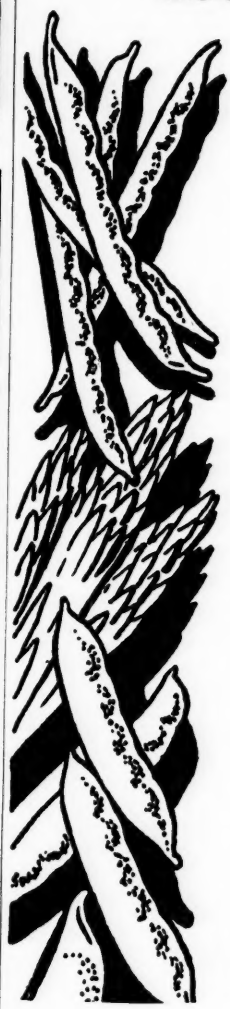
Carolina Steel and Iron Company
The Largest Steel Fabricators in the Carolinas
Greensboro North Carolina
S. C. Rep., Edward McCrady, 307 Allen Bldg., Greenville, S. C.

20 Million Pounds of Vegetables Quick-Frozen with



TRADE **FRICK** MARK

Refrigeration



THAT'S the annual production of BIRDSEYE foods at the Seabrook Farms—Deerfield Packing Company, Bridgeton, N.J., where 20,000 acres of land yield two to three crops annually.

- Sixteen big Frick machines carry the immense load: temperatures range down to 30 deg. below zero. The use of Frick two-stage compressors has cut the cost of refrigeration one-third.
- The office building at the Farms is also air conditioned with Frick Refrigeration.
- Get information now on what Frick Refrigeration can do for *YOUR* business. Write

WAYNESBORO, PENNA. U.S.A.
FRICK CO.
DEPENDABLE REFRIGERATION SINCE 1882

Ceramic Raw Products of North Carolina

(*Continued from page* 34)

roofing products, and in the rubber industry. The talc of Cherokee county is pure enough to be used in the paper, bleaching, and paint industries.

Within the past two years there were discovered in Cleveland and Gaston counties very large and accessible deposits of spodumene, a lithium bearing mineral. The spodumene occurs in dikes varying in width from 10 to 125 feet, and can be traced by outcrops for a distance of 10 or 15 miles. There is sufficient material on the ground to supply the trade indefinitely.

Spodumene is a white mineral quite similar in appearance to feldspar, and may be substituted for feldspar in the manufacture of certain ceramic products. It is also the chief source of lithium, a metal which will float on water and which is used in hardening lead and aluminum. Lithium chloride is made from this metal and is used in air conditioning equipment.

To date, very little spodumene has been used, which apparently is due to the heretofore limited supply available and the consequent fact that few companies have done very much testing for its utilization. However, with the discovery of these large deposits, and with the process of beneficiation either by decrepitation, froth-flotation, air-elutriation, tabling, or any combination of these methods of separation, the consumption in the future should be considerably enlarged.

In the lower piedmont section of the State there are numerous occurrences of volcanic ash. So far, there have been no commercial uses for this ash, but it has possible use in the ceramic industry as well as in the manufacture of cleansing products. Screen analyses have shown as high as 99.49 through 300 mesh. However, the chemical analyses vary considerably. The silica content varies from 75% to 96%. The iron content is usually high and therefore would not be satisfactory for high-grade ceramic products.



A typical surface outcropping of pyrophyllite

Distributed throughout the entire State are numerous deposits of clays suitable for the manufacture of bricks and tile. In the lower piedmont section, especially Union, Stanley, and Montgomery counties, there are deposits of shales which make a very high-grade brick. Tests show that these bricks are as good as any manufactured in America.

In the Dan and Deep River Triassic Areas there are large deposits of sedimentary shales suitable for the manufacture of high-grade brick and tile.

The annual production varies between two and three million dollars.

Ground Water Resources for Industry

(*Continued from page* 44)

of heavy bronze have to be placed. Large areas of carefully graded gravel must be placed around these screens to filter and hold back the sands. The wells are then continued down into the rock formation to augment the supply from the water bearing rocks. These contain very little or no sand from that point down.

Conditions in Mississippi, Arkansas, Louisiana and Texas require gravel wall wells, a type which originated in the latter state. In these areas the water must be extracted from sands. The supply is not as freely obtained as it is in the water rock bearing formations further east. Abundant supplies, however, can be had. Wells can produce all the way from one-half to three million gallons per day, depending on conditions. Some wells are sunk to depths as great as 2,000 feet. A greater number and larger diameter holes are rotated through the water bearing sand formation to secure the large quantities of water sometimes required.

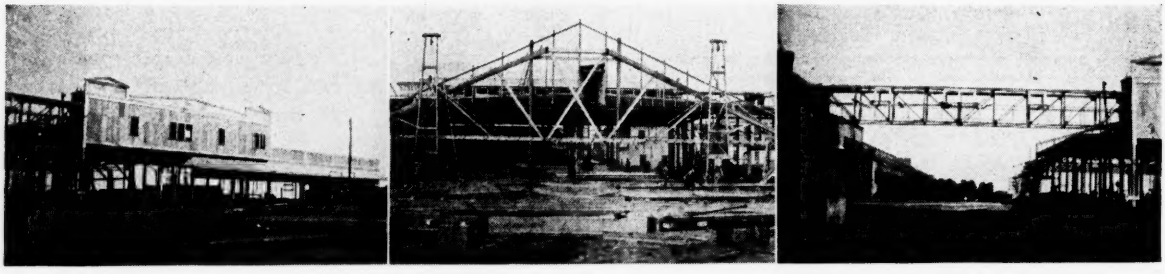
These holes are then under-reamed hydraulically by high pressure jets to wash out large amounts of sand. Where the sands are too hard to use this method, the underreaming is done with mechanical reamers. Screens are set through these areas. Gravel is forced down under hydraulic pressure until the screens are completely surrounded with heavy layers to effectively exclude all sands from the wells.

There is no danger of stopping up the formation and gravel beds around these screens, if the well is properly designed and developed and the gravel bed is sufficiently large for the quantity of water to be extracted. The point of separation of the water from the native sand is so far from the well screen that the friction of the flowing water is not high enough to carry the sand into the gravel walls.

Experience governs selection of the quantity and kind of gravel, as well as the placing. Each location and condition requires special treatment. Text books cannot convey the data necessary for constructing the large gravel wall wells. Well engineering and contracting for large water supplies exacts the most versatile information known.

Not only must a successful well contractor be a hydraulic engineer, but he must be a student of geology as the subject applies to the hydrological features of the project. He must know rainfall, its quantity and rate, the amount of run-off, the transpiration from plant life as well as evaporation losses. He must also know the probable rate of flow through various sands and gravels and other aquifers. Finally, he must be a diplomat capable of convincing the majority that a well is more than a hole in the ground and that a hand pump is not a water supply.

View showing the street elevation of the steel frame bulkhead building being constructed for the Clyde-Mallory Lines at Charleston, S. C. Designated as pier 3, the project is being carried out by G. W. Hessler, Inc., of Jacksonville, Fla., under supervision of Tilt-Hargan Co., New York engineers. The new $300,000 facilities will be turned over to the Clyde-Mallory lines about July 1



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PERFORATED METALS
A Superior All-Purpose Product

Nearly 60 YEARS perforating metals
HUNDREDS of DIES
LARGE STOCKS of METALS
Prompt shipments
Price Write for quotations
Get acquainted with ERDLE QUALITY and SERVICE
Satisfaction guaranteed
Write for metal sample plate.

ERDLE
PERFORATING COMPANY
Rochester New York



PERFORATED METAL
of every sort

for Screening, Grading, Ventilating or any industrial purpose. Also Grilles of many beautiful designs.

5631 Fillmore St., Chicago, Ill. New York Office: 114 Liberty St.

The Harrington & King Perforating Co.

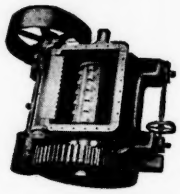
PERFORATED METALS
Screens . . . . Grilles

Extensive facilities and long experience make Hendrick the logical source for all perforated metals . . . screen plate with any shape opening, round, square, hexagonal, squaround,* slotted, corrugated . . . heating and ventilating grilles of every description. Hendrick can furnish them in any desired commercially-rolled metal. *Reg. U. S. Pat. Off.

HENDRICK MANUFACTURING CO.
44 Dundaff Street, Carbondale, Pa.
Manufacturers of Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids.

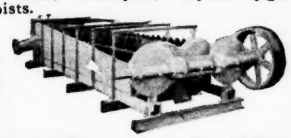
Ornamental and Industrial
PERFORATED METALS
We carry a large stock for immediate shipment.
Send for Our Catalogue.
Manhattan Perforated Metal Co., Inc., 43-17 37th St., L. I. City, N. Y.

CLAY WORKING MACHINERY
FOR BRICK, TILE AND BLOCK, FROM SMALLEST TO LARGEST CAPACITY.
Write for information
J. C. STEELE & SONS, STATESVILLE, N. C.



McLANAHAN EQUIPMENT
CRUSHERS
Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

SCREENS
Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.



McLanahan & Stone Corp. *Established 1835* HOLLIDAYSBURG, PENNSYLVANIA

MUNDT
PERFORATED METALS
The few perforations illustrated are indicative of the wide variety of our line—*we can perforate almost any size perforation in any kind of metal or material required.* Send us your specifications.

Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction. For years we have specialized in supplying all kinds of screen plates to the pulp and paper industry.

Write for catalogue of Patterns

TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, MONEL METAL, STAINLESS STEEL, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
490 Johnston Ave., JERSEY CITY, N. J.

Bethlehem Steel Opens New Mills at Sparrows Point

(*Continued from page 28*)

the coating department, tin plate and terne plate finishes for use in making both general line and sanitary cans, either plain or lithographed. Stock is also produced for the manufacture of a vast number of other commodities. An annual output of 260,000 gross tons is possible in the two mills.

Rod and Bar Mill

The new continuous rod and merchant mill is designed for the simultaneous rolling of four strands of rods, although the mill is not yet fully equipped for this operation. At the present time only one two-strand finishing train has been installed. Addition of a second train, with coiling and conveying equipment, is the only requirement for four-strand production, when an output of over 20,000 gross tons of rod per month will be available. The present two-strand capacity is about 12,000 gross tons per month.

Rods are produced in sizes from No. 5 and up to and including ¾ in. diameter; accurate merchant rounds and squares are also produced. An important product, not heretofore made at the Maryland plant, is concrete reinforcing bars, which are rolled in sizes from ⅜ in. round up to and including 1 in. square. Together with the older, No. 1 unit the new mill will supply all rod used in the adjoining wire mills.

Production in this new unit will permit a No. 5 rod, nearly a mile long, to be delivered to the reels in about 60 seconds, emerging from the last stand at a speed of about 4000 ft. per minute, or nearly 46 miles per hour. Close tolerances, accuracy of contour, and improved physical properties are directly attributable to this high speed operation, and to the Morgoil bearings used on all stands. The improved quality and greater length of the rod also offer important advantages in the subsequent wire drawing operations.

Billets are received in standard lengths of 30 ft., from 1 13/16 to 3 in. square and are first brought to rolling temperature in a heating furnace with full automatic control. One by one, as they are needed, the heated billets are then pushed out of the furnace into the "bite" of the rolls of the first roughing stand.

The mill has 21 stands, divided into nine roughers, four intermediate roughers, two looping stands with repeaters, and six finishing stands. All stands have Morgoil bearings with provision for vertical, horizontal, and longitudinal adjustment of the rolls.

Rolling speeds vary from about 6 r.p.m. in the first roughing stand to about 1500 r.p.m. at the last pair of rolls. A billet passes through all stands in about 60 sec. Due to the high speed of operation the temperature drop during rolling is low, not more than about 300 deg.

The finished rod is delivered to specially designed laying reels, synchronized with the mill. Here the rod is coiled at high speed, the finished coils being transferred horizontally by a motor operated pusher to a continuous chain conveyor, 330 ft. long. After travelling the entire length of this conveyor the rod bundles are automatically transferred to a hook carrier which takes them to a point where they are stored or loaded into cars.

The finishing mill is used for rods in sizes up to ⅜ in. diameter. Rod of and above this size is finished in No. 14 stand and delivered to two reels of the pouring type. The bundles from these reels are transferred to the same conveyor which serves the four laying reels. Bars to be sheared into straight lengths are also finished on the 15th stand and delivered to two cooling beds, 270 ft. long, with accurately machined notches to insure proper alignment during cooling. Bending of reinforcing bars is done in two heavy bar benders and one stirrup bender.

The annealing equipment consists of four radiant tube furnaces and twelve bases with inner covers, or shrouds. Correct annealing temperature is maintained by automatic air-fuel ratio control. Carefully purified and dried gas is used under the inner covers during the annealing to keep the coils from oxidizing.

Industrial Use of Glycerine

(*Continued from page 35*)

ers have long made use of the moisture-absorbing properties of glycerine in solving the problem of freshness.

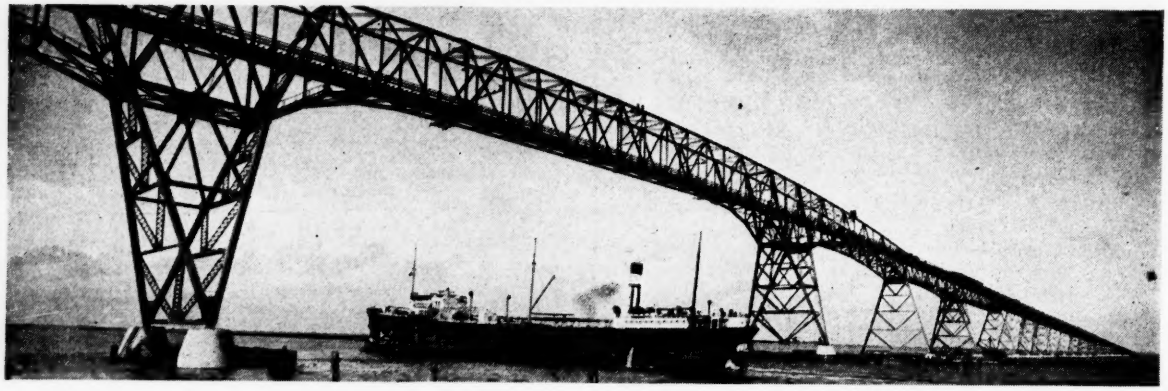
It is not known generally that glycerine is normally present in the digestive organs. Actually the average daily intake of fat in the present day diet, which is estimated at approximately 100 grams, produces in the process of digestion about one-tenth its weight in glycerine. In experiments at the University of Chicago as much as 110 grams were fed daily, proving conclusively that glycerine can be safely contributed to the daily diet in very large quantities.

From the extended usage for which glycerine has already demonstrated its value in various products and processes and with especial regard for the varied characteristics adapted to Southern usage, there are sufficient indications to warrant further experiment with a view to additional use of this versatile product.

Acknowledgement

In compiling the necessary information to produce the map and article dealing with the state of Alabama which appears in this issue, the MANUFACTURERS RECORD wishes to acknowledge its appreciation of the cooperation extended by the following: Mr. Walter B. Jones, State Geologist of Alabama; Mr. John M. Ward, Secretary, Alabama State Chamber of Commerce; Southeastern Freight Bureau; U. S. Geological Survey; U. S. Bureau of Air Commerce; U. S. Army Engineers; U. S. Southern Forest Survey; and the many others whose writings were freely consulted.

The new highway bridge at Port Arthur, Texas. The main span provides a vertical clearance of 176 feet and a horizontal clearance of 600 feet. The structure is about a mile and a half in length and has an extreme height of 230 feet.





Quality Dependability Service

ON YOUR NEXT ORDER

Made to order Cold Upset and Rolled Thread products by Progressive are assurance against time and labor troubles in assembly operations. It will pay you to consult our specialists before placing your next order. Their suggestions may show you the way to greater fastening economy.

PROMCO BRAND QUALITY

The PROGRESSIVE MFG. CO.
TORRINGTON · · · CONNECTICUT

CONVERSE BRIDGE & STEEL CO.
Chattanooga, Tennessee
Structural Steel for all Industrial Structures, Buildings and Bridges.
LARGE STOCK FOR IMMEDIATE SHIPMENT

Bristol Steel & Iron Works, Inc.
STRUCTURAL STEEL
For Bridges, Buildings and All Industrial Purposes
Steel Plate and Miscellaneous Iron Work
Complete Stock Shapes, Plates, Sheets and Bars for Immediate Shipment
BRISTOL, VIRGINIA-TENNESSEE
"SAVE WITH STEEL"

FOR THEIR GREATER SERVICE USE
SHIMER SUCCESS PLANING MACHINE KNIVES AND BITS,
Surfacing Knives and many Knives of smaller proportions for special duty in wood cutting. It will be to your advantage to look into this feature of our service. Our prices, too, are very attractive if you take in consideration their extra wear.
Samuel J. Shimer & Sons, Inc.
MILTON, PA.



CLEAN, PRECISE
CASTINGS
Iron, Brass, Bronze, Aluminum, Special Mixes
Complete Foundry Service. Pattern and Machine Shops. We specialize in the quantity production of small and medium size castings, small machines and devices.
The RICHMOND FOUNDRY & MANUFACTURING CO. Inc.
RICHMOND, VIRGINIA.
"A Dependable Source of Supply"

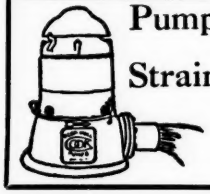
1905 Strand 1938



FLEXIBLE SHAFTS AND MACHINES
1/8 TO 3 H.P.
FOR THE PATTERN SHOP, FOUNDRY MACHINE SHOP AND ALL METAL SHOPS
SEND FOR CATALOG
N. A. STRAND & CO.
5001 NO. WOLCOTT AVE., CHICAGO



EARLE GEARS
Cut Spur, Bevel, Herringbone, and Worm Gears
All sizes. Every description. Operating Machinery for Bridges, etc. "Lea Simplex" Cold Metal Saws.
The Earle Gear & Machine Co.
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110 State St., Boston, Mass.
149 Broadway, New York City



Pumps—Deep-Well Plunger and Turbine
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WATER PRESSURE SYSTEMS
A. D. COOK, Inc.
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PREDETERMINING THE TREND IN BOILER DESIGN SINCE 1860.
TITUSVILLE BOILERS
THE TITUSVILLE IRON WORKS CO.
Division of Struthers-Wells Titusville Corporation
TITUSVILLE, PA.
A TYPE AND SIZE FOR EVERY REQUIREMENT



A barge-load of elemental sulphur loads at the dock at Freeport Sulphur Company's Lake Grande Ecaille mine. From there it moves by barge down the canal to Port Sulphur on the Mississippi river 45 miles below New Orleans

Air Mail Anniversary

The Post Office Department is commemorating the Twentieth Anniversary of the First Air Mail Flight from New York to Washington, May 15, 1918, during the forthcoming week of May 15-21.

The part taken by the Post Office Department in the development of the air plane by its use for air mail service has resulted in placing the United States first among the countries of the world in efficiency, speed, and miles travelled. It has also contributed by its pioneering to the development of the air plane for commercial and other uses so that today our country is equipped with both planes and intrepid pilots well trained.

The history of the air mail reads like fiction.

Its present day efficiency has made it an almost indispensible means for conveying the business man's and the banker's letters, containing paper for discount, contracts, proposals and orders.

It is fitting that the Post Office Department commemorates this special event that the public as well as business be educated to the advantages of the use of the air mail service.

The South is especially honored in that one of the two official Post Office cachets to commemorate the event will be placed on letters sent to Kitty Hawk, N. C., where the Wright Brothers made the first flight; the other at Dayton, Ohio; and that Postmaster P. R. Younts, Charlotte, N. C., has been appointed National General Chairman of the Commemorative Committee.

Postmaster Ernest Green, Baltimore, State Chairman for Maryland, is actively engaged in an effort to have the business men of Baltimore use air mail generally for their correspondence and is using the slogan "Mail Air Mail Today for Delivery Tomorrow." He is asking during the commemorative week to send by air mail at least one letter and to check its advantages over ordinary mail. The rate to anywhere in the United States, including Canada, and to Alaska, is 6c per ounce or fraction—or but 3c per ounce more than for ordinary letters.

Filming the Story of Steel

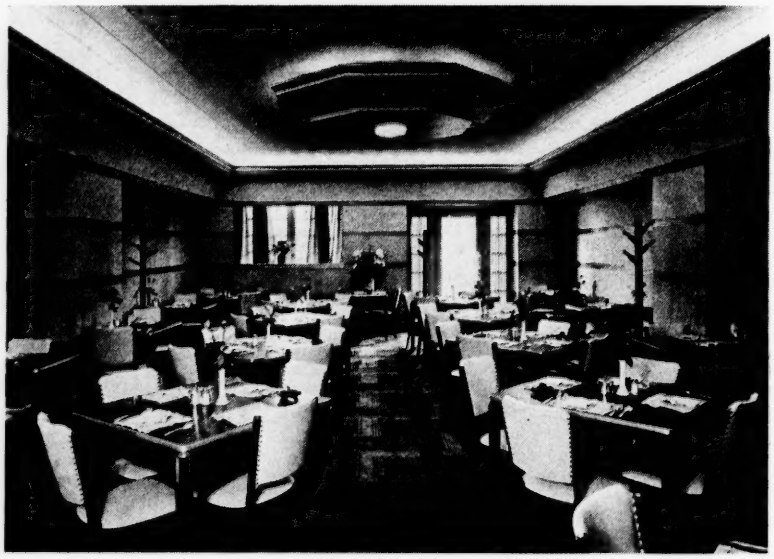
The technicolor motion picture "Men Make Steel," which last year was filmed on U. S. Steel Corporation properties, was given a preview last month in New York. The first time such an industrial film has been made, this tells the complete story of steel from the mining of the ore through the various phases of processing to the finished product.

The actual filming occupied ten weeks and was carried out by a Hollywood crew under direction of Roland Reed with Edwin C. Hill as commentator. It started at Hibbing, Minn., with the mining of the ore and thence at Duluth where the ore was shipped to Gary, Ind. Other "shots" were taken in Illinois, Ohio, and several plants in Pennsylvania. No effort was spared to make the feature a success and special platforms were erected over the ship's grab-bucket and later suspended from the traveling cranes in order that the best views and uninterrupted processes might be adequately obtained.

Cleaning Suits

If predictions made by the research division of Westinghouse Electric & Manufacturing materialize, the average man, 25 years from now, will be wearing fireproof clothing which he will clean by throwing into an electric furnace.

Birmingham's newest and one of Alabama's smartest coffee shops, the Rainbow Room, was opened recently at the Redmont Hotel. Designed by D. O. Whilldin, Birmingham architect, and decorated by Hawkins & Israel, local interior decorators, the new dining room replaces the Redmont's Coffee Shop. The management has also reopened the special dining room on the mezzanine floor after a complete redecoration. Construction was carried out by Perisini Construction Co., Birmingham



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Alabama's Railroad Industry

(*Continued from page 27*)

of $22,743,352. Nearly every city and town in Alabama shared in this huge railway payroll, the largest for any industrial group in the state. The importance of Alabama's railway payroll may be better appreciated when it is pointed out that the payroll of the average manufacturing establishment in Alabama, based on the 1935 census of manufactures, is around $35,400, excluding railway repair shops. Therefore, the railway payroll in the state equals the combined payroll of 642 of Alabama's 1719 manufacturing establishments.

Railway taxes represent the industry's fourth major contribution to Alabama. The railroads are taxpayers in every county in Alabama, and in many counties they are the leading sources of tax revenues.

In 1936, the most recent year for which tax figures are available, state, county and local taxes paid by the railroads in Alabama totaled $2,498,420, or $471 for every mile of railroad in the state. The contribution which the railroads are thus making to the support of state and local governments has helped to finance an extensive program of highway construction in recent years. Had it not been for this support from the railroads, such a program, along with other public improvements, would have been impossible without imposing a much heavier tax burden upon the farmers, merchants and industries of the state.

A large part of the railway tax dollar in Alabama goes to support the public schools. A detailed analysis of 1930 railway taxes in the state showed that 46.2 per cent was used for public education. On this basis, approximately $1,142,000 of Alabama's 1937 railway taxes were used for school purposes. This is sufficient to defray the annual cost of educating approximately 38,000 children in the state.

Thus, as providers of essential transportation service, as purchasers of the products of Alabama industries, as employers of Alabama workers, and as large taxpayers, the railroads are highly important factors in the industrial and commercial life of Alabama. The revenue which they receive for service performed flows back in never-ending stream to keep the wheels of Alabama industry turning, to keep Alabama workers employed, to support local and state government, to build and maintain the highways, to support the public schools and other institutions and to add in innumerable ways to the economic and social weal of the state.

When the railway industry prospers, Alabama prospers. When railway earnings are low, and railway purchases and payrolls are curtailed as a result, communities throughout Alabama are adversely affected. The fortunes of the two—one a producer and the other a consumer of coal, iron, steel and lumber—are inseperably linked. That is why Alabamans are vitally interested in speedily restoring the railroads to financial health and maintaining them in full vigor.



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WHITCOMB LOCOMOTIVES

Silver Lined Cans

A relatively inexpensive form of solderless, silver-lined container suitable for the shipment and storage of foodstuffs, chemicals, etc., has been developed by the Bureau of Standards and a manufacturer of cans in a research project directed toward new industrial uses of silver.

So far, 12 oz. containers have been produced from silver clad copper and steel sheets, the base metal being twelve thousandths of an inch thick with a silver coating one thousandth of an inch thick. The development of larger sizes is now in progress. Because of the germicidal and non-corrosive and other unusual properties of silver, this development promises to be of considerable importance.

A New Clay Processing Plant For the South

A modern up-to-date plant for the manufacture of bleaching clays by Quality Earths, Inc., has recently been completed and put in operation on the banks of the Tombigbee River.

Located in lower western Alabama within a short distance of the port of Mobile and on a navigable river, its product can either be shipped to Mobile by barge for export or delivered to Birmingport and other rail connections to the north.

The plant is complete with a pulverizing and granulating mill manufactured by the Williams Pulverizer and Crusher Company of St. Louis, and powered with a Diesel motor of 125 h.p. manufactured by The Caterpillar Tractor Company.

Air separation is used, the finished clay being collected in a cyclone and delivered to the bags through a Bates Bagger.

The clay is dried by indirect heat, using fuel oil for the heating and automatically controlled by thermostatic equipment.

The deposit of hard and soft clay is almost pure in quality, located in the rear of the mill whence it can be delivered by gravity to the preliminary crusher.

The hard type clay is used for granular grades, while the softer clays are adapted to the powdered trades, used in clarification of oils and solvents.

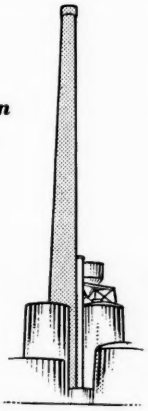
This deposit has been inspected and tested by government officials and reported as a high grade material suitable for the many uses connected with the manufacture of oils. Certain stratum has been found satisfactory as a drilling mud constituent, a field that is becoming increasingly important.

The plant has a capacity of four tons per hour of finished material and can mill the clay in grades ranging as high as 95 per cent through 300 mesh.

Some of the uses to which clay is adapted include clarification of mineral and vegetable oils, dry cleaner solvents, decolorizing and clarification of diesel and fuel oils, and as a catalyst in treating gasolines. Clays are also used in the treatment of crank case oils, as a vehicle for dusting insecticides, and when combined with a suitable bonding clay are used for the manufacture of a light weight insulating and refactory product.

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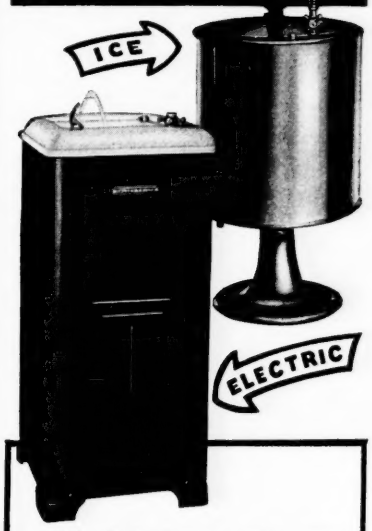
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A Large Sulphur Dose

United States farms and gardens will use approximately 290,000 tons of sulphur during 1938, according to an estimate by the Freeport Sulphur Company. Either as dust or a sulphuric acid the element will be used in the form of fertilizers, sprays, insecticides and fungicides.

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United States Cotton Exports

Exports of lint cotton from the United States in March totaled 426,000 bales valued at $22,632,000 compared with 399,000 bales valued at $20,731,000 in February, according to the U. S. Bureau of Foreign and Domestic Commerce.

Total exports for the eight months August to March aggregated 4,657,000 bales valued at $257,544,000 compared with 4,389,000 bales and $296,450,000 for the corresponding eight months of 1936-37, representing an increase of 268,000 bales or 6.1 per cent in quantity but a decrease of $38,906,000 or 13.1 per cent in value.

As compared with the figures for the eight months of 1936-37 smaller shipments were recorded for Japan and Canada while larger shipments were shown for the other important destinations.

Exports by principal countries for eight months August to March follow:

	Bales		Dollars	
	1937-38	1936-37	1937-38	1936-37
United Kingdom	1,394,000	962,000	75,178,000	64,132,000
France	673,000	620,000	38,128,000	41,787,000
Germany	589,000	500,000	33,565,000	34,072,000
Italy	409,000	275,000	22,304,000	19,070,000
Japan	434,000	1,242,000	23,383,000	83,260,000
Canada	183,000	207,000	9,874,000	14,046,000
Poland	170,000	144,000	9,641,000	8,743,000
Belgium	159,000	132,000	9,111,000	8,932,000
Netherlands	98,000	71,000	5,795,000	4,991,000
Sweden	71,000	67,000	4,102,000	4,752,000

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1—Wiley mod. 75 whirley with 75' boom, fully revolving, with 80 HP. electric hoist and 30 HP. swinger, 20 ton cap., and with 1½ yd. Blaw Knox clamshell bucket.

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2—672 CFM Ingersoll-Rand XRB complete with 125 H.P., General Electric Synchronous motor, 3 phase, 60 cycles, 220 volt with Starting Equipment.
1—525 CFM Pennsylvania 3A.
1—385 CFM Ingersoll-Rand ER-1.
1—366 CFM Sullivan WG-6.
1—253 CFM Sullivan WG-6.
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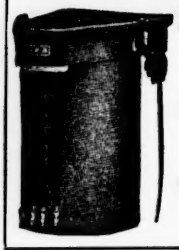
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